JAN 20 1944

Medical Library

BRITISH MEDICAL JOURNAL

JOURNAL OF THE BRITISH MEDICAL ASSOCIATION

SATURDAY DECEMBER 25 1943

TABLE OF CONTENTS

The Population Problem of India D. B. BLACKLOCK, M.D. 805
Infective Hepatitis: The Oral Hippuric Acid Test IAN GORDON, M.B. 807
Blood-pressure Readings in Surgical Work HAROLD DODD, F.R.C.S. 811
Continuous Intravenous Anaesthesia F. W. ROBERTS, M.B., and B. A. SELLICK, M.B. 813
Fatal Case of Cerebral Malaria I. B. SNEDDON, M.B. 814
Care of Chronic Sick MARJORY WARREN, M.R.C.S. 822

MEDICAL MEMORANDA

Suppurative Mastoiditis in an Infant. D. S. LEWES, B.M. 815
Sulphathiazole Insufflations as Treatment of Gonococcal Vaginitis. O'DONEL BROWNE, F.R.C.P.I. 816

GENERAL ARTICLES AND NEWS

A Biological Criticism of Education...823
A New Form of Splint Padding. W. O. SPENCE, M.B. 817
TWENTY-ONE YEARS OF THE B.P.A. ...823
"THE WEEK'S GOOD CAUSE" 824
FUTURE MATERNITY AND CHILD WELFARE SERVICES 824
NOVA ET VETERA.....825
THE SERVICES 834
UNIVERSITIES AND COLLEGES.....834
MEDICAL NOTES IN PARLIAMENT.....835
MEDICAL NEWS 836

OBITUARY

L. T. Bond, M.B., B.Chir. 834
Jessie Gray, L.R.C.P.&S. 834
W. H. Gossage, M.R.C.S. 834
R. O. Morris, M.D. 834
J. M. Johnston, M.B., D.P.H. 834

REPORTS OF SOCIETIES

MEDICAL OFFICERS OF HEALTH: Blood Changes in Infectious Diseases 826
EUROPEAN ASSOCIATION OF CLINICAL PATHOLOGISTS 826

Epidemiology Section.....837

LEADING ARTICLES

Tetanus Immunization.....818
Roehampton and Rehabilitation.....819

ANNOTATIONS

Psychiatric Implications of Surgery...819
Eradication of *Anopheles gambiae* in Brazil 820
Medicine in Persia.....820
Colonial Research.....820
Infant's Reaction to Feeding.....821
Inadequate Hospital Diets.....821

MEDICO-LEGAL

Fracture or Perthes's Disease?.....833

LETTERS AND ANSWERS

Serum Sickness from A.T.S.—Orchitis of Mumps—Oestradiol Benzoate for Dysmenorrhoea—Recurrent Ulcerative Stomatitis—"Spots" in Children—Recurrent Styes—Income Tax—Postural Dizziness—Menopausal Flushes—Antenatal Care—Research in Senile Diseases—Treatment of Tapeworm—Chickenpox after Contact with Shingles—Destruction of Schistosome Larvae—Fleas and Cockroaches—Film of Air-raid Casualties—Back Numbers Wanted 838–40

SUPPLEMENT

Proceedings of Council.....*105*
Changing Medicine. TOM GARLAND, M.D. *107*
CORRESPONDENCE *108*

CORRESPONDENCE

Teaching of Anaesthetics. KATHARINE LLOYD-WILLIAMS, M.D. 827
Nitrous Oxide Anaesthesia. M. H. W. HOLLOWAY, M.R.C.S. 827
Trigeminal Paralysis after Trichlorethylene. H. J. V. MORTON, M.D. 828
Treatment of Facial Palsy. WILFRED HARRIS, M.D. 828
Ophthalmia Neonatorum. BETHEL SOLOMONS, M.D. 828
"Duodenitis." N. P. HENDERSON, M.B. 828
Radiology. E. MILLINGTON, M.R.C.S. 829
Shock Treatment of Mental Disorder. D. W. WINNICOTT, M.R.C.P. 829
Vasoconstrictors in Coryza. E. CAREW-SHAW, F.R.C.S. 830
Examining the Neurotic. E. STUNGO, L.R.C.S., and E. P. H. CHARLTON, M.D. 830
Conversion Hysteria. CHARLES BERG, M.D. 830
Scabies and Impetigo. A. M. H. GRAY, M.D. 830
Iodine Deficiency. A. W. BAUER, M.D. ..831
Ligature of Innominate Artery. VICTOR BONNEY, F.R.C.S.; W. B. BILLINGHURST, M.B. 831
Toxic Goitre. E. M. FRAENKEL, M.D. ..831
Medical Boarding for the Merchant Navy. H. M ROYDS JONES, M.D. 831
Loading a Stretcher. BOWMAN EDGAR, M.B. 832
Agents Provocateurs. PETER PARRY, M.D. 832
The Army's Steel Helmet. CLEMENT FRANCIS, M.B. 833
Pre-Nazi Medicine in Vienna. E. REICHENFELD, M.D. 833

REVIEWS

Medical Mycology.....816
Genetics of the Mouse.....816
Home Security.....817
Notes on Books.....817

BRITISH MEDICAL ASSOCIATION, TAVISTOCK SQUARE, LONDON, W.C.

No. 4329, WEEKLY, PRICE 1/6 *Copyright* REGISTERED AS A NEWSPAPER

'Mapharside'

(META-AMINO-PARA-HYDROXY-PHENYLARSINE OXIDE HYDROCHLORIDE)

The original arsenoxide product for the treatment of syphilis, introduced after co-operative research in two American universities and the Research Department of Parke, Davis & Co.

SOME SIGNIFICANT DATES IN THE ARSENICAL TREATMENT OF SYPHILIS

1902 Laveran and Mesnil discover that sodium arsenite has an effect in experimental trypanosomiasis in mice.

1907 Atoxyl—elaborated by Bechamp in 1863—first used in syphilis by Lassar.

1909 Salvarsan, or "606," later known as "arsphenamine," used experimentally by Hata in the treatment of spirillosis in fowls.

1910 Arsphenamine given clinical trial in syphilis by various workers.

1912 Ehrlich and his colleagues produce neo-arsphenamine, having previously discarded arsenoxide as too toxic.

1920 Voegtlin and Smith suggest that the parasiticidal action of the arsphenamines is due to their conversion in the body into arsenoxide.

1923 Dale envisages the possibility of arsenoxide being used by continuous intravenous-drip therapy.

1932 Hamilton produces for Tatum and Cooper an improved arsenoxide (Mapharside).

1935 Foerster and his associates confirm the value of 'Mapharside' in clinical trials. 'Mapharside' is introduced to the medical profession in America.

1936 'Mapharside' is introduced to the medical profession of Great Britain at the Annual Meeting of the British Medical Association at Oxford.

1936 to 1943 The superiority of 'Mapharside' over the arsphenamines is admitted by an ever-increasing number of experienced venereologists. It is adopted for the routine treatment of syphilis by the U.S.A. and Canadian Medical Services and the Royal Navy.

Parke, Davis & Co., 50, Beak Street, London, W.1

Inc. U.S.A., Liability Ltd.

Why ANDREWS *is the* Ideal Tonic Laxative

Andrews is a pleasant tasting, effervescent aperient with tonic properties, and is a valuable aid to Inner Cleanliness.

Andrews is beneficial in most digestive disorders, feverish conditions, the ailments of children, and in pregnancy and lactation. Its use may be discontinued without reaction when the need for it ceases.

Andrews justifies the description of "Ideal Tonic Laxative" because:—

FIRST . . Patients like taking Andrews, because its brisk effervescence is immediately refreshing and stimulating, it sweetens the mouth and helps to clean the tongue.

NEXT . . Andrews allays gastric discomfort, heartburn and nausea by diminishing the stomach's acidity and relieving flatulence.

THEN . . Andrews increases bile flow, relieves hepatic congestion, and improves digestion. It is partly absorbed from the intestine as alkali, and therefore helps to correct acidity in the blood and to stimulate kidney function.

FINALLY . . Acting by osmosis, Andrews clears the bowels gently and entirely without irritation.

ANDREWS LIVER SALT

SCOTT & TURNER LTD · ANDREWS HOUSE · NEWCASTLE-UPON-TYNE 2

M18

"FELLOWS"

TRADE MARK

COMPOUND SYRUP OF HYPOPHOSPHITES

helps to overcome the devitalizing effects of respiratory infections, pregnancy, dietary deficiencies; and it is an excellent appetite stimulant. This dependable, bitter, and reconstructive Tonic contains valuable mineral salts; and it has been prescribed by doctors the world over for more than 60 years.

Such care is devoted to the preparation of Compound Syrup of Hypophosphites "Fellows" that only by making sure of the name "FELLOWS" can you be certain of the same unvarying quality.

Samples on Request

Fellows Medical Mfg. Co., Ltd.

286 St. Paul Street, West
Montreal, Canada

BRITISH MEDICAL JOURNAL

LONDON SATURDAY DECEMBER 25 1943

THE POPULATION PROBLEM OF INDIA

BY

D. B. BLACKLOCK, C.M.G., M.D.

Professor of Tropical Hygiene, School of Tropical Medicine, University of Liverpool

The health or welfare officer of the near future will doubtless find himself in a more favourable position than his forerunners of to-day, and it may be well for us to examine some of the possible consequences of the change, not all of which must necessarily be good. Reasons now exist for anticipating great betterment in the health prospects of all peoples, and seemingly trustworthy political utterances portend developments which will certainly upset previous calculations. Countries like India, which at the present time suffer most severely from preventable disease, are exactly those in which the ameliorative changes will provide the most spectacular results.

Even a few years ago the idea that the adequate treatment and the successful prevention of disease might entail weighty political and administrative consequences would have seemed absurd, and it may still seem so to many people to-day. But I venture to think that such results will indeed occur—and, moreover, that they will be very grave indeed—if the aspirations expressed by some of the framers of our post-war policy are translated into practice. For example, the Atlantic Charter has implications which deserve the careful study of all health officers, under which title we must include not only the medical profession but also all welfare and social workers. They will presently encounter questions which need an immediate answer. If the valid promises contained in the Atlantic Charter are fulfilled, what are the kinds of consequences which we may expect? This Charter has been called an epoch-making declaration. It is incumbent upon us to try to foresee, if we can, the sort of epoch which may be produced by it. The case of India at once suggests itself for consideration.

The Malthusian Doctrine

Malthus, in 1798, based his arguments about population increase on his two natural laws: the first, that food is necessary for the existence of man; the second, that passion between the sexes is inevitable and will remain in its present state. He concluded that the power of increasing population was greater than the power of the earth to produce sustenance for man, and that therefore vice and misery must periodically ensue.

However, the increase of population in geometrical progression, coupled with an increase of the means of subsistence in arithmetical progression, as accepted by Malthus, could not, in a limited area, continue for very long. The time would soon come when the various classes of the population would have reached that standard of living—dictated by their accepted ideas of a reasonable subsistence—below which they were not prepared to descend. If a rising population were then allowed to continue its increase at the same rate as before, even for a very brief time, there would be nothing for the new arrivals to live on. The strange stage of affairs postulated by Malthus, at which masses of people with no means of subsistence could yet contrive to keep on propagating their species freely—in a nutritional vacuum as it were—could not actually be reached. But there could and undoubtedly would come a point beyond which any additional people must perish of hunger. An increase of population in a place where the means of subsistence is no longer capable of expansion does in fact involve starvation.

George in 1889, writing of the Malthusian theory, was emphatic in his denial of its truth: "Examination," he wrote, ". . . shows that this doctrine has no real support either in fact or in analogy, and that when brought to a decisive test it is utterly disproved." It is of interest to note that Darwin, in Chapter III of his *Origin of Species*, when describing the nature of the struggle for existence, stated that "it is the doctrine of Malthus applied with manifold force to the whole animal and vegetable kingdom."

Great public attention should be paid to one statement for which George was responsible. He wrote: "Even if it be admitted that the tendency to multiply must ultimately produce poverty, it cannot from this alone be predicated of existing poverty that it is due to this cause, until it can be shown that there are no other causes which can account for it—a thing, in the present state of government, laws, and customs, manifestly impossible."

The Land Policy of George

For the cure of poverty the sovereign remedy proposed by George was the taxation of land values:

"Taxes may be imposed upon the value of land until all rent is taken by the State, without reducing the wages of labour or the reward of capital one iota; without increasing the price of a single commodity, or making production in any way more difficult.

"But more than this. Taxes on the value of land not only do not check production as do most taxes but they tend to increase production, by destroying speculative rents. How speculative rent checks production may be seen not only in the valuable land withheld from use, but in the paroxysms of industrial depression which, originating in the speculative advance of land values, propagate themselves over the whole civilized world, everywhere paralysing industry, and causing more waste and probably more suffering than would a general war. Taxation which would take rent for public uses would prevent this; while if land were taxed to anything near its rental value, no one could afford to hold land that he was not using, and consequently, land not in use would be thrown open to those who would use it. Settlement would be closer, and, consequently, labour and capital would be enabled to produce much more with the same exertion. The dog in the manger who, in this country especially, so wastes productive power, would be choked off."

It should be carefully observed that in this passage George was directing the thoughts of his readers to *existing* poverty. His violent objection to the Malthusian argument was based on his belief that Malthus assumed that the *existing* poverty so painfully evident on all sides was due to an already operating pressure of population on the means of subsistence. George argued that population-pressure could not be the explanation of this kind of poverty, since there were vast areas of productive land, not only abroad but also at home in America, which were still entirely undeveloped. This failure to utilize natural resources he traced to one fact—the existence of the right of private ownership of land.

George's apparently casual expression, "even if it be admitted that the tendency to multiply must ultimately produce poverty," is one which we should now note; it is fundamental. This most significant statement seems worthy of far greater attention than has ever been given to it. Does it not tell us that George himself harboured inner reservations as to what

might be the ultimate outcome, even in places where his policy of taxation of land values had been put fully into operation?

Some Assumptions, and the Prospect in India

However this may be, let us ourselves be bold enough to make certain assumptions with regard to India and to discover whither they will lead us. The assumptions which we shall permit ourselves to make are somewhat as follows:

1. That the most favourable agrarian policy—better, it may be, than the taxation of land values, or than nationalization by State purchase, or allotment of the land to the people by declaration of Government, as in Northern Nigeria—has been put into effect. All the land, therefore, has by some means been made accessible directly or indirectly to the enterprise and industry of every person in the State.

2. That the land so freed for development is being fully utilized for agriculture, forestry, and mining, with the aim of reaching the maximum production of all kinds of goods.

3. That this freedom to produce goods from the land has been supplemented by the complete freedom to trade in them which the Atlantic Charter has forecast in a provisional way.

4. That, in addition to the above, a conscious and large-scale effort is being made to provide proper housing, adequate clothing, suitable food, good education, and the best possible medical care for everyone. (The promise of all these things seems implicit in the Atlantic Charter.)

5. That health officers and welfare workers are therefore afforded every facility for applying universally the vast knowledge of disease prevention and treatment already in existence and all the scientific advances which may accrue in the future.

Then, if these assumptions are accepted as correct, or even as correct in large part, let us try to consider in an unprejudiced way what the prospect is likely to be in an already densely populated and disease-ridden country such as India.

According to the census of 1941 the total population of all India (British India and Indian States) was 388,800,000. This number is distributed mostly in village communities over a total area of 1,576,000 square miles—i.e., about 247 persons per square mile. It is still a rural population. There are over 500,000 villages, and only 37 of the towns have populations over 100,000.

It has recently become evident that the duty of adjusting their internal political and economic outlook to meet the new conditions will devolve upon the people of India themselves. This development has long been foretold. Lord Macaulay in 1834 understood well that experience of administration would lead to a demand from the people of India for European institutions. "Whether such a day will ever come, I know not, but never will I attempt to avert or retard it. Whenever it comes, it will be the proudest day in English history." The future from the medical point of view already lies largely in the hands of the Indian people themselves. Even now, in the civil medical department of India, out of a total of six thousand fully or partly qualified medical men fewer than two hundred are British.

There can be few thoughtful Indians who will claim that the present state of affairs in regard to the health of the people of India is satisfactory. A recent official report states that "the village house is still ill ventilated and over-populated; the village site dirty and crowded with cattle, choked with rank vegetation, and poisoned by stagnant pools; and the village tanks polluted and used indiscriminately for bathing, cooking, and drinking."

Haward attributes the slow rate of progress in India to financial causes: "Conservative finance—prudent in an administration working in a country where standards of living are low—has prevented rapid acceptance of elaborate measures for educational development and for establishing public health organizations on European lines." He refers to the terribly high rate of infant mortality in India, but nevertheless, in spite of all these drawbacks to health, he has to write: "The population had increased by 40% in 1931 as compared with 1881, while the increase in 1941 over 1931 has proved to be nearly 15%."

According to Wattal, Hindus believe that perdition awaits a woman who dies unmarried or a man who dies without a son; for Hindus, therefore, marriage is an almost compulsory sacrament. A Hindu male must marry and beget sons who will perform his funeral rites, lest his spirit should have to wander uneasily in the waste places of the earth. It is said that the very name of son, *putra*, means one who saves his father's soul from the hell called *Puta*. A Hindu maiden unmarried at puberty is a cause of social obloquy to her family and of potential damnation to her ancestors. It has been observed that Muslims are not handicapped by any such penalties—though they have a saying of the Prophet that "when a man marries verily he perfects half his religion." Yet among them also the married state is equally esteemed—partly, it may be, owing to Hindu example, but partly also owing to the conditions of life in a primitive society, where a wife is almost a necessity both as a domestic worker and as a helpmate in the field. When Wattal wrote in 1934 there was in India a total population of about 353 millions, and of these no fewer than 83 million females and 84 million males were said to be married. The potentialities for increase of population are illustrated locally by the State of Travancore, in Southern India, which in one year recorded a birth rate of 41.5 per thousand and a death rate of only 16 per thousand. Even higher birth rates than this are recorded.

Taking India as our example, it is hard to avoid the conclusion that an enlightened land policy and the putting into practical effect of the terms of the Atlantic Charter, coupled with the continuance of the above views on marriage and production of families, are bound to produce acute economic and political difficulties. Such a condition of over-population may be anticipated as can lead only to one result—starvation. If a sequence of events such as that suggested is likely to occur—and I think that it will occur very soon if the assumptions are correct—then we ought now to be preparing plans for dealing with the problems which will arise. In anticipation of the time when neither further irrigation schemes nor more scientific treatment of the soil can result in increased production from the land, Indian statesmen must have some policy ready by which great disaster to their country may be avoided.

The Doctor's Duty

Medical officers and social workers will not find it a pleasant reflection that the more they succeed in alleviating human suffering and in preventing disease the more rapidly will they reach, in some countries, a stage at which nothing but starvation looms ahead. Taking the reaction of medical men and women to such probabilities, there are several courses open. They may elect to wash their hands of all responsibility in the matter, to leave things severely alone, and to let the politicians and Nature take their course. That, no doubt, would be to follow the line of least resistance, but it is diametrically opposed to the aims of medical science. The days are gone, never to return, when an attack of malaria was accepted as a warning of Divine displeasure, when for a surgeon to straighten a crooked limb was to cast doubt upon the perfection of Creation, and when the agony of the pains of labour had to be endured because so it was ordained. No doctor to-day will assent to any restraint which would deprive him of the privilege of relieving, as best he can, the immediate suffering of man, woman, or child. Nor will any doctor accept the ignominy of being compelled to stand idly by and watch a preventable disease spreading and taking its toll of human life. On the contrary, the doctor will insist on pointing to all the diseases which are already preventable—for example, diphtheria, yellow fever, plague, smallpox, and many others—and will demand to be given means by which he may take the steps necessary to prevent them. The doctor feels no doubt whatever about the line of action which he must follow. So far as he is concerned his duty is absolutely plain: it is to relieve the suffering patients and, so far as lies in his power, to prevent all human disease. Where malnutrition exists, all social and welfare workers will use every endeavour to reduce it and to obviate its recurrence.

Post-natal and Natal Checks on Population

India has almost the highest death rate of all countries; it is more than double that of England and Wales. Thus the position of India among the nations is by no means enviable in regard to its present death rate, but if the money and the necessary staffs were available that death rate could with certainty be greatly reduced. It may be argued, however, that,

in spite of the application of scientific knowledge to such a country as India, Nature will always provide suitable and satisfactory checks upon population. The checks which Nature may impose ought therefore to be considered.

Warfare is a post-natal check which acts for a period, but its effects are largely on the male section of the community. Apart from the reduction of the numbers of males brought about directly by death in action and death from wounds, there are also certain other less-specialized losses which may result from war. For example, the destruction of crops may lead to wholesale malnutrition or even the starvation of large numbers of the general population. The conditions of existence imposed by warfare will frequently tend to increase the virulence and the rapidity of spread of disease. The influenza epidemics of 1917 and 1918 were held responsible for more deaths than were caused by enemy action. Moreover, like war, catastrophes of Nature, such as floods and earthquakes, may have both direct and indirect consequences. The floods which occur periodically on the Yellow River in China, for example, may result in numerous deaths from drowning. The 1934 Bihar earthquake caused the death of thousands of persons directly, and the death of thousands indirectly owing to starvation. In the Quetta earthquake 25,000 persons are said to have been killed. The deaths due to starvation and disease consequent on such catastrophes often exceed the deaths caused directly.

Furthermore, in densely populated areas numbers of deaths from starvation, or from disease to which malnutrition predisposes, may be expected to follow upon crop failures due to such milder derangements as excessive drought or frost. The existence of a Famine Code in India and of an Indian Famine Trust, intended to give monetary assistance to persons in districts affected by a shortage of rainfall, indicates the seriousness of the risks even now being constantly run in that country. Many diseases, especially in epidemic form, may wipe out a large proportion of a local population; influenza and plague are instances of disease which may reduce populations over fairly wide areas. Among the post-natal checks on population one of the most important in countries with low standards of living is excessive infant mortality.

With the exception of warfare, all the foregoing post-natal checks may be classed as involuntary, inasmuch as normal people would avoid them if they could. But in the post-natal period there are also voluntary checks, and these the parent or the community can apply. Infanticide by exposure of unwanted children and by other means is in several countries not unknown even to-day. The killing of twins, as practised among certain peoples, is a system which, whatever its original significance, may have some effect in limiting population by preventing twin-bearers from reproducing.

Natal checks include stillbirths and deaths of mothers at childbirth. How important the natal factor is can be concluded from the stillbirth rates and the high figures of maternal mortality. The figures given by Megaw for maternal mortality are worth noting here. He estimates that in India 200,000 mothers die in childbirth every year.

Prenatal Checks

Prenatal artificial checks in the post-conception period include all methods at present employed for causing miscarriage or producing abortion. The reduction of population which results from these means comprises all children unborn and all the mothers who succumb to the effects of the drugs used or of the mechanical operations performed, as well as all the later children who might have been born to these mothers had they survived. It may be observed that none of these prenatal methods can be considered devoid of risk. The safe production of even early abortion involves a surgical operation which requires precaution if it is to give the mother a fair chance of survival in a good state of health. As regards preconception checks, we may here leave out of consideration mechanical means of sterilization of the male and female. These are also operative procedures which involve risks. It may be possible to impose them by statutory means on those whose offspring are not welcomed by the State, but only in the case of persons who are not free. They are never likely to be accepted voluntarily by any large number of free peoples.

Among normal and civilized people it is at a stage before conception has occurred that a check on population is most often adopted and may most safely be undertaken. One method —that which is called the ideal one—is for men and women to abstain voluntarily from marriage, or, more broadly speaking, from reproduction. Religious celibacy has its effect on population, as also has secular common prudence, as when men put off marriage till late in life because they cannot afford to keep a wife and children. But much more usually it is the employment of contraceptives which provides the solution of any dreaded over-population problem among careful people with forethought. To what extent, if any, the frequent use of chemical or mechanical contraceptives finally impairs health is as yet by no means certain, and no doubt it will be some years before convincing evidence can be collected and sifted. That the immediate physical and mental risks are not considered great, however, seems already to be widely accepted.

Conclusion

We may sum up by concluding that if the world achieves lasting peace, if the maximum productive use of land is practised, and if, moreover, there is a sustained effort to apply our knowledge to the betterment of the health of man by attention to the prevention of disease and to improving housing, environment, and nutrition, then India, with all these newly acquired aids towards increase in the numbers and the good health of families, will be so rapidly populated that starvation will inevitably result, and that soon. In order to avert this it will be necessary for the politicians and administrators of India—as it presently will be for those of certain other countries—to make up their minds on what is to be their standard of living, and on the number of people which the land will support at that standard. Having determined this, they will then be compelled either to educate their peoples up to a high level of moral restraint or to educate them in the practice of contraceptive methods. Only so will they be able to limit the numbers of the population to the figure indicated by those standards of living which they have chosen, and to avoid the starvation of many of their people.

INFECTIVE HEPATITIS

WITH SPECIAL REFERENCE TO THE ORAL HIPPURIC ACID TEST

BY

IAN GORDON, O.B.E., B.Sc., M.B., M.R.C.P.

Major, R.A.M.C.

During the period Dec., 1941, to Sept., 1942, there were admitted to hospital 168 cases of infective hepatitis in the Middle East Forces. This figure does not include 50 cases of jaundice in persons undergoing antisyphilitic treatment, which are considered elsewhere. The patients came from certain base units, from rest and training camps, and from the forward areas in the Western Desert. The epidemic reached its peak in the early autumn (September), but figures showing the seasonal incidence would be misleading, since there were often large troop movements in the area served by the hospital. For the same reason it was difficult to trace contacts and so to assess accurately the incubation period of the disease. It was estimated at 4 to 5 weeks. Booth and Okell (1927–8) consider the incubation period to be not less than 20 and not more than 40 days. Excellent epidemiological studies have been carried out in rural districts in England by Pickles (1930, 1939) and Newman (1942), who have brought forward fairly conclusive evidence of an incubation period of 26 to 35 days.

Onset and Pre-icteric Stage

The disease for the most part affected the apparently healthy. In the war of 1914–18 so-called catarrhal jaundice was common in the Middle East. Bacillary dysentery and diarrhoea were so frequently associated with the onset of the illness that

a suggestion was put forward that there was a definite relationship between the two diseases. In this series dysentery and diarrhoea were associated with the onset in only 19 cases. This remarkable difference is not due to any change in the character of the disease, but is the result of more efficient hygiene and sanitation, which during this war has been a feature in the Middle East.

A few epidemics have been associated with sore throat, notably those recorded by Fraser (1935) and Glover and Wilson (1931). No such association was noted here. General debility, sore throat, respiratory infection, or skin sepsis preceded the onset of the disease in only 8 cases. While there was wide variation in the clinical picture in the pre-icteric stage, two fairly distinct types of onset were recognized: (1) cases in which there occurred a well-marked febrile attack, and (2) cases in which no febrile attack was observed. In the great majority of cases the pre-icteric stage had passed and jaundice had developed before admission to hospital, but in such cases notes on the prodromal symptoms from regimental medical officers were of great value. Only occasionally was it difficult to determine the type of onset.

Group 1: 88 Cases with Febrile Attack

The onset was usually sudden, often with shivering and occasionally with a rigor. Fever ranged from 100° to 102°, the highest recorded temperature being 104°. The pulse rate usually varied from 80 to 90, and often dropped to 50 or 60 when jaundice became established. Headache, mostly frontal or retro-ocular, was common, and was noted in 85%. It was rarely bitemporal or occipital. A few patients complained of photophobia and pain on movement of the eyes. Giddiness was noted occasionally, and malaise, rarely amounting to lethargy, was almost constant. Two-thirds complained of backache and/or pains in the limbs.

Gastro-intestinal symptoms were universal in some form or another, and sometimes their appearance was delayed until the third or fourth day of the illness. Loss of appetite was complained of in all but three cases, and nausea, vomiting, and abdominal pains or discomfort were common. Constipation occurred in just over one-third, and mild diarrhoea in 9%. The average duration of this prodromal stage before the appearance of jaundice was 5.8 days, and in one case it lasted as long as 17 days.

Group 2: 80 Cases without Febrile Attack

The pre-icteric stage in this group was of slightly shorter duration, averaging 4.1 days. In 8 cases jaundice was the first symptom to be noted, and the longest duration of this stage was 18 days. Slight frontal headache was complained of in one-third, and, though no definite febrile attack occurred, a few cases had fever from 99° to 100°. The great majority, however, were afebrile.

Gastro-intestinal symptoms were evident from the first and, though similar to those in the "febrile" group, were not so constantly present. A number of patients complained of relatively few gastro-intestinal symptoms, and 8 would admit of no previous symptoms whatsoever. In most cases anorexia was complete; in others (17%) appetite for food remained good or was only slightly affected. Many patients said they would sit down to a meal, but after eating a few mouthfuls of food the nausea was so intense or the feeling of distension in the abdomen so great that they could eat no more. Malaise, a bad taste in the mouth, and disinclination for smoking were common. Vomiting, especially after fatty foods, was noted in 49%. Abdominal discomfort or pain was complained of in the right hypochondrium or mid-epigastrium, and was described as a soreness, fullness, tightness, a dull ache, a feeling of distension, or, rarely, as severe pain. Sometimes this discomfort was confused with nausea. Heartburn and flatulence were not uncommon, and in one-quarter the bowels were constipated. Suffusion of the conjunctivae, as noted by Bates (1936) and Newman (1942) in children, was not observed. In both groups dark urine was noticed usually one to two days before the onset of jaundice.

TABLE I

	Cases with Febrile Attack	Cases without Febrile Attack
	(%)	(%)
Shivering	76	—
Retro-ocular headache	34	2·5
Frontal headache	51	32
Backache and limb pains	64	14
Anorexia	97	83
Nausea	85	71
Vomiting	56	49
Abdominal discomfort or pain	51	45
Constipation	36	25
Diarrhoea	7	9
Duration of pre-icteric stage	5·8 days	4·1 days
Duration of jaundice	23·4 „	25.3 „

Icteric Stage

After the appearance of jaundice the physical findings and subsequent clinical course were *almost identical* in all respects in the two groups. When jaundice became evident, first in the conjunctivae and then in the face and neck, fever in Group 1 abated and all constitutional and gastro-intestinal symptoms tended to disappear. In fact, as soon as the yellow tinge of jaundice appeared most patients began to feel well and to eat heartily. Very occasionally low fever continued for a day or two in the icteric stage.

The persistence, for a few days in the icteric stage, of anorexia, nausea, abdominal discomfort, and sometimes of vomiting occurred in one-quarter of all cases, and the symptoms were generally associated with clay-coloured stools. With the return of pigment in the stools the troublesome symptoms usually disappeared. Vomiting was so severe in 3 cases that intravenous saline with glucose was administered, with rapid improvement. Paresis of accommodation—a serious symptom—occurred in one deeply jaundiced patient, but disappeared quickly after the administration of glucose-saline intravenously. The tongue was clean in the majority of cases—an interesting observation in view of the fact that disorder of the liver is commonly said to be associated with a coated tongue. Tenderness in the epigastrium and in the right hypochondrium was common.

Enlargement of the liver was detected in 49% of cases in Group 1 and in 51% in Group 2. The liver became palpable and was almost invariably tender at the first appearance of jaundice or, less commonly, within a few days of its onset. The liver edge extended on the average to 1½ fingerbreadths below the right costal margin. There was a definite relation between the size of the liver and the duration of the icteric stage. Though in a few cases of prolonged jaundice the liver never became palpable, it is clear (Table II) that the larger the liver the longer the duration of jaundice. In giving a prognosis it is helpful to remember that gross hepatomegaly is associated with severe and persistent jaundice. The enlargement in the average case lasted for about a week. In some cases hepatomegaly was transient, lasting for only two to three days; in others it persisted for three to four weeks.

TABLE II

No. of Cases	Size of Liver	Average Duration of Jaundice
2	3–4 f.b.	62·0 days
19	2–3 f.b.	34·4 „
63	1–2 f.b.	24·4 „
84	Not palpated	20·0 „

The spleen was palpable in 6 cases in Group 1 and in 10 cases in Group 2 (average total, 10%). The enlargement usually disappeared within a week, and in all but one case was associated with hepatomegaly.

Duration of Jaundice.—In over two-thirds of cases jaundice lasted from 15 to 35 days. It usually developed rapidly and reached its maximum within a few days; after a varying time it began to fade slowly. The depth of jaundice varied considerably, and in a few cases only the conjunctivae were tinged. In "febrile" cases the average duration of jaundice was 23.4 days, and in the "non-febrile" group it was 25.3 days; 24 cases (14%) out of 168 had an icteric stage which lasted more than 35 days, the longest duration being 81 days.

Leucocyte Count.—The leucocyte count in the pre-icteric stage and during the first three days of jaundice ranged from 3,100 to 8,800 per c.mm. (average 5,800 per c.mm.). A leucopenia with a relative lymphocytosis and monocytosis is described as a common finding, and this was present in a number of cases. It was more common, however, for the leucocytes and the differential count to be within normal limits. The average differential count during the first three days of icterus was (20 cases): polymorphonuclears, 55% (44–64%); lymphocytes, 39% (30–52%); monocytes, 5% (1–10%). (Other cells not included.)

Stools.—The stools were clay-coloured or light brownish at some time or another in the majority of cases. Their appearance was usually noticed by the patient at or before the onset of jaundice, but was sometimes delayed until jaundice had been well established. In a few cases they appeared intermittently, and in others every stool passed was well coloured with pigment.

Urine.—Dark-coloured urine was noticed by most patients one to two days before the appearance of jaundice; but sometimes it was observed every day during the previous week, and 11 patients said they had noted dark urine 7 to 14 days before the occurrence of jaundice. A small quantity of albumin was found in the urine of a few patients during the first two or three days of jaundice, and in some instances occasional granular and hyaline casts were present. In 60 cases an early morning specimen of urine was examined daily or on alternate days for bile (Gmelin's test), bile salts (Hay's sulphur test), and excess urobilinogen (Ehrlich's diazo reagent). The average duration of biliuria as estimated from the day of appearance of jaundice was 14 days, and bile salts were detected for three to four days after the test for bile became negative. It will be generally agreed that both Gmelin's nitrous acid test and the iodine ring test for bile pigment in the urine are unsatisfactory, since in the latter stages of jaundice, when excess bilirubin is still present in the blood, these tests for bile are negative. Excess urobilinogen was found in the late pre-icteric stage and in many cases during the first few days of jaundice. The test was usually, but not invariably, positive when the stools were clay-coloured or light brown. This may be regarded as evidence that stoppage of bile-flow was usually incomplete, since the formation of urobilinogen depends on the presence of bile pigment in the intestine. It has already been shown (van Rooyen and Gordon, 1942) that, in cases of infective hepatitis when the stools are clay-coloured, quantities of bile can be obtained by duodenal intubation. Occasionally, however, excess urobilinogen was absent in the presence of clay-coloured stools. In one severe case, in which jaundice lasted 55 days and the stools were clay-coloured for 14 days, excess urobilinogen was never present in the urine. Probably in this case there was *complete* stoppage of the flow of bile, so that in the absence of bile in the intestine no urobilinogen was formed.

Diagnosis in the Pre-icteric Stage

The initial febrile attack in cases in Group 1 resembled, and was often confused with, sandfly fever and malaria, but the distinguishing feature in these cases was the presence of gastro-intestinal symptoms, especially anorexia and nausea. Diagnosis was difficult when the appearance of these symptoms was delayed for a few days.

Pneumonia, meningitis, and septicaemia had occasionally to be excluded when fever was high in the pre-icteric stage, and in such cases the leucocyte count was of great assistance. The enteric group of fevers, especially paratyphoid fever, had not infrequently to be considered. In 2 cases abdominal pain was so severe that a diagnosis of acute appendicitis was made by the medical officer. In patients without an initial febrile attack the gastro-intestinal symptoms were sometimes confused with an alcoholic "hang-over"—an excusable mistake, as the symptoms are almost identical. Many of these cases, before the appearance of jaundice, were also labelled "gastritis" or "dyspepsia."

The main diagnostic aid in the pre-icteric stage, however, is the presence of bile pigment and bile salts in the urine. Excess urobilinogen is also found at this stage, but its presence must be interpreted with caution, since it occurs in excess in the urine in malaria, and indeed when pyrexia is high from any cause. Excess urobilinogen in the urine of afebrile cases is of much more diagnostic value. Confirmatory evidence of subclinical icterus may be obtained by removing a sample of whole blood in a dry syringe and estimating the icteric index or serum bilirubin.

The histamine intradermal test described by Brodribb and Cullinan (1936) as diagnostic for subclinical icterus was carried out in a number of cases, but gave disappointing results. The test was rarely positive before the appearance of bile pigment in the urine.

Other Symptoms

Itching was not a usual complaint, and was recorded in only 9 cases. Occurring usually but not invariably at the height of the jaundice, itching was for the most part generalized, and was sometimes severe enough to prevent sleep. Apart from an accompanying persistence of anorexia and nausea in 3 cases, itching could not be associated with any particular symptom or sign, nor did it bear any relation to the severity or duration of the jaundice.

Urticaria occurred in 5 cases, none of which gave any previous allergic history. In one case it appeared on the sixth day of jaundice, but in the others it was noted late in the disease when the jaundice was decreasing. Slight epistaxis occurred in a few cases.

Relapses and Complications

When jaundice had almost or totally disappeared, there occurred in 5 cases a sudden relapse with deepening of jaundice, lasting on the average six to seven days. In one case the relapse, which appeared to have been brought on by a severe cold in the head, lasted three weeks. No satisfactory explanation for these relapses can be offered. They occurred in the more severe cases.

Death from acute necrosis of the liver is fortunately a rare occurrence, and there were no such cases in this series. Some of the more severe cases suffered from a considerable amount of debility, but otherwise there were no complications.

Liver Function Tests

Hippuric acid liver function tests by the oral method were carried out in a number of cases at various stages of the disease. This test, devised by Quick (1936), is a measure of the power of the liver to convert benzoic acid to hippuric acid, and is considered to be an index of the "detoxifying" power of the organ.

Briefly, it is carried out by giving orally 6 g. of sodium benzoate in the early morning and collecting for four hours complete hourly specimens of urine. The hourly excretion of hippuric acid is remarkably constant in the normal adult, who will excrete about 3 g. of sodium benzoate (in the form of hippuric acid) in four hours. Three grammes is chosen as the average normal for calculating the output in terms of percentage of normal. Excretion of over 90% of this amount is regarded as non-pathological (Quick, 1940).

Attempts to correlate the oral hippuric acid test with the bromsulphalein and galactose tolerance tests have been made by Snell and Plunkett (1936), and their results indicate that the oral hippuric acid test is reasonably accurate and satisfactory. Mateer and his co-workers (1942, 1943) have made a comparative evaluation of the newer liver function tests and are of the same opinion, though they found that the intravenous hippuric acid test was more sensitive than the oral method.

Quick's original technique was followed. The modifications of the test introduced by Weichselbaum and Probstein (1939), Probstein and Londe (1940), and others were not adopted. In the present series oral hippuric acid tests were carried out in the main at three stages of the disease: (*a*) when jaundice was at about its height; (*b*) when jaundice had almost disappeared; and (*c*) after two to four weeks' convalescence, when jaundice had totally disappeared. Many results were confirmed by a repetition of the test. During the first three weeks of jaundice tests were performed in 14 cases of all grades of severity, the duration of icterus varying from 7 to 81 days. Evidence of impaired function of the liver of from 37 to 72% of normal was found in all cases. Similar results have been recorded by Quick (1936), Probstein and Londe (1940), and Henderson and Splatt (1942).

In an attempt to compare the function of the liver in mild, average, and severe cases, a number of tests were performed at the stage of the disease when jaundice had practically disappeared. All these patients were "up-patients" on ordinary diet, and jaundice had just disappeared from the skin and only a trace remained in the sclerotics. The icteric index ranged from 8 to 20. It is at this stage of the disease that patients are usually discharged from hospital, and it was considered desirable to obtain, in addition, some information as regards liver function at this time. That the liver was slow in regaining normal function in some cases was suspected on clinical grounds. We have seen in this hospital recurrence of jaundice in four patients (not included in this series) who had indulged rather too freely in alcohol during convalescence. It was thought that in these cases, although jaundice had practically or totally disappeared on discharge from hospital, liver insufficiency was still present, and the imbibing of alcohol had caused further liver damage, resulting in the reappearance of jaundice.

Hippuric acid tests performed in 29 cases when jaundice had almost disappeared revealed evidence of liver insufficiency in the majority. The results (Table III) show that in 19 cases (65%) the excretion of benzoic acid was less than 90% of normal, indicating an insufficiency of the "detoxifying" power of the liver. It will be observed that the type of onset, the duration of jaundice, and the presence or absence of hepatomegaly do not bear any constant relation to the function of the liver (as estimated by the hippuric acid test) when jaundice has almost disappeared. Indeed, fairly severe liver insufficiency may be present in relatively mild cases of jaundice (Cases 25 and 39).

Ten of the more severe cases showing abnormal hippuric acid tests on discharge from hospital were readmitted after two to four

weeks' convalescence for the performance of further tests. Jaundice had totally disappeared, and all these patients stated that they felt well and fit for duty. Urines were negative for bile and excess urobilinogen, and in no case was the liver palpable.

Of these 10 cases 6 gave evidence of recovery of liver function, while in 4 cases the excretion of sodium benzoate was less than 90% of normal, indicating insufficiency (Table III). Of the 4 cases showing liver insufficiency after total disappearance of the jaundice, one (Case 2) had been deeply jaundiced and for at least two weeks had passed stools deficient in bile pigment. In Case 4 the liver was palpable for the first four weeks of the illness. In the initial stages Case 6 was acutely ill with persistent vomiting, which required the administration of saline and glucose intravenously. The remaining case (No. 13) was an apparently average one of 28 days' duration, the liver being palpable for only a few days at the beginning of the illness. Cases with a clinical picture similar to these, however (Cases 1, 3, and 5), had normal hippuric acid tests. Thus it is not possible to detect, on clinical grounds, cases which will show insufficiency of liver function (as measured by the hippuric acid test) after the disappearance of jaundice. Whether complete recovery of the detoxifying power of the liver eventually occurred in these cases is not known, as it was not possible to follow them further.

TABLE III.—*Hippuric Acid Test*

Case No.	Duration of Jaundice (days)	Jaundice Disappeared from Skin; Present in Sclerotics (% of normal)	After 2–4 Weeks' Convalescence Jaundice Totally Disappeared (% of normal)	Liver	Remarks
1	81 NF	104% (9)	—	+ for 2 wks.	Severe case, with vomiting ++
2	55 F	67% (15)	77% (7)	0	
3	52 NF	61% (20)	103% (12)	+ for 6 wks.	
4	52 F	60% (17)	89% (7)	+ for 4 wks.	
5	50 NF	115% (10)	—	+ for 2 wks.	
6	45 F	73% (13)	73% (8)	0	Severe case, with vomiting ++
7	45 NF	51% (10)	90% (5)	+ for 6 wks.	
8	45 NF	89% (15)	—	+ for 1 wk.	
9	35 NF	74% (20)	98% (6)	0	
10	33 F	112% (8)	—	0	
11	32 NF	101% (17)	—	+ for 1 wk.	
12	28 F	78% (10)	95% (10)	0	
13	28 F	66% (17)	65% (7)	+ few days	Average case
14	28 F	71% (18)	110% (10)	0	
15	28 F	117% (12)	—	0	
16	28 NF	84% (9)	—	0	
17	26 F	52% (12)	—	0	
18	23 NF	96% (11)	—	+ few days	
19	22 F	99% (11)	—	0	
20	20 F	110% (15)	—	0	
21	20 F	66% (15)	104% (5)	0	
22	20 NF	77% (12)	—	0	
23	20 NF	86% (8)	—	+ for 2 wks.	
24	18 NF	64% (17)	—	+ for 1 wk.	
25	15 F	51% (16)	—	0	
26	14 F	85% (10)	—	+ few days	
27	14 NF	101% (18)	—	+ few days	
28	11 NF	97% (8)	—	0	
29	3 NF	52% (8)	—	0	

Figures in parenthesis=Icteric index.
F=Febrile type of onset.
NF=Non-febrile type of onset.

Second Attacks

There are few references to second attacks of infective hepatitis. Findlay, Dunlop, and Brown (1931) have recorded a case in which jaundice recurred two months after the primary attack, and Bates (1936) described the case of a boy aged 8½ years who had a recurrence of jaundice, more severe than in the first attack, 34 days after biliuria had disappeared. A similar recurrence three months after the first attack in a female aged 35 years was noted by Newman (1942).

TABLE IV

Case No.	Intervals between Previous and Present Attacks (years)	Duration of Present Attack	Hippuric Acid Test when Jaundice almost Disappeared (Present in Eyes Only) (% of normal)
1	1	16 days	—
2	8	8 ,,	—
3	14	7 ,,	72%; later 84%
4	8 and 13	66 ,,	64%; later 86%
5	10	20 ,,	110%
6	15, 11, and 1	3 ,,	91%

In the present series 6 patients gave a history of one or more attacks of jaundice, which had occurred at least a year previously. These attacks had lasted from three to six weeks, and the descriptions of them resembled average attacks of infective hepatitis.

It will be seen from Table IV that the subsequent attacks were, on the average, no more severe than an ordinary attack of the disease. Nor can it be said that there was evidence of much residual liver insufficiency. Hepatomegaly was not a feature in these cases, the liver being palpable in only 2 instances. Hippuric acid liver function tests carried out when jaundice had almost disappeared showed that there was little or no disturbance of the detoxifying power of the liver. Of the 4 cases tested, 2 showed normal liver function and 2 only slight impairment (84% and 86% of normal). In actual fact, at this stage in the disease there is no more disturbance of the detoxifying power of the liver in these cases than in cases which do not give a history of a previous attack. Unfortunately, it was not possible to perform further tests on these patients.

It will be appreciated that only one single function of the liver has been tested in this series of cases, and it is probable that had other liver function tests been employed different results would have been obtained. Evidence of liver damage many years after recovery from the disease has been discovered when other tests for liver function have been employed. Using the bilirubin excretion test, Soffer and Paulson (1934) found evidence of liver insufficiency in 9 out of 11 patients who had had catarrhal jaundice. In 6 of the 9 cases the attack had occurred 3 to 18 years previously. The degree of retention of injected pigment varied from 10.7 to 50%, and they remark that the severity of the attack bears no relation to the degree of residual hepatic involvement. Likewise, Bergmann (1932) found that many years after infective hepatitis there was evidence of liver insufficiency, as shown by the bilirubin and galactose tolerance tests.

Notes on Aetiology

During the war of 1914–18 so-called catarrhal jaundice occurred in epidemic form in the Middle East theatre of war. Much literature appeared on the aetiology of the disease, and the general opinion at that time was well summarized by Willcox (1919), who held the view that "epidemic catarrhal jaundice is due to an intestinal infection causing duodenitis and catarrh of the bile ducts. The area round the ampulla may be mainly affected, and in some cases there may be produced an ascending catarrh causing cholangitis. In either case obstructive jaundice may result."

During the last 20 years this type of epidemic non-spirochaetal jaundice, which is of world-wide distribution, has been extensively studied, and the view that jaundice is caused by local inflammation and obstruction has fallen into disfavour. A great deal of evidence now exists to show that icterus is caused by a hepatitis, the essential lesion being degeneration of the parenchymatous cells of the liver. The post-mortem evidence is well reviewed by Cullinan (1939) and Findlay (1940), and in the aspiration biopsy experiments of Roholm and Iversen (1939) diffuse hepatitis was demonstrated in all cases.

Hurst and Simpson (1934), Hurst (1940), and Barber (1937) recognize two different types, which they maintain can be differentiated on clinical grounds: (1) a primary hepatic necrosis (or infective hepatitis); and (2) true catarrhal jaundice, which depends on obstruction to the flow of bile caused by catarrh of the duodenum and lower extremity of the common bile duct. Findlay (1940) also recognizes these two types, but is of the opinion that there are no symptoms by which true catarrhal jaundice can be differentiated from infective hepatitis.

In the present series there occurred cases the clinical pictures of which were almost identical with Hurst and Simpson's clinical description of primary hepatic necrosis on the one hand and of true catarrhal jaundice on the other. The existence in the same epidemic of two clinical types each with an entirely different aetiology is unlikely. Furthermore, liver insufficiency as measured by the hippuric acid test was present in both clinical types. Cullinan (1939), in a review of 23 outbreaks in England, also considers that there is not enough evidence to justify the above subdivision.

Treatment

Routine treatment consisted of a low fat and high carbohydrate diet, glucose twice or thrice daily, and a small dose of magnesium sulphate in the early morning. When the skin became free from icterus, patients were allowed up and were put on ordinary diet. When vomiting was frequent, excellent results followed the administration, by intravenous drip transfusion, of a few pints of normal saline with 5% glucose. Nausea and abdominal discomfort, persisting during the icteric stage, were sometimes troublesome symptoms. Some degree of relief was obtained by the use of sodium taurocholate, 4 to 6 gr. in cachets. Alkaline powder was also useful. Calcium lactate is indicated in unusually prolonged cases. The majority of cases require a spell of convalescence: alcohol should be forbidden during this period.

Summary and Conclusions

A short clinical description of 168 cases of infective hepatitis is given. Two fairly distinct types of onset are recognized and described. It is emphasized that the subsequent clinical course is almost identical in the two types.

The average duration of icterus was 24 days; the icteric stage lasted from 15 to 35 days in just over two-thirds.

The liver was palpable in 50% of cases and the spleen in 10%. Gross hepatomegaly was associated with prolonged jaundice, and the larger the liver the longer was the duration of icterus.

The diagnosis in the pre-icteric stage is often difficult, and in many cases will remain uncertain until bile pigment appears in the urine.

Hippuric acid tests for liver function by the oral method were performed in 14 cases when icterus was at about its height during the first three weeks of jaundice. Evidence of impaired function was found in all cases.

Recovery of liver function (as measured by the hippuric acid test) appears to be slow in some cases. In the convalescent stage of the illness, when icterus had just disappeared from the skin but remained in the sclerotics, evidence of liver insufficiency was demonstrated in 19 (65%) of the 29 cases tested. Impairment of liver function in the convalescent stage occurred in mild, average, and severe cases, and bore no constant relation to the presence or absence of hepatomegaly.

Evidence of liver insufficiency after total disappearance of jaundice was demonstrated in 4 cases.

Six cases with a history of one or more previous attacks of the disease are mentioned. Second attacks appear to be no worse than the first. The results of hippuric acid tests performed in 4 cases showed little or no evidence of residual liver insufficiency.

I wish to thank Col. H. D. F. Brand for permission to publish these cases, and Capt. A. D. Morgan, R.A.M.C., for help with the hippuric acid tests.

REFERENCES

Barber, H. (1937). *British Medical Journal*, **1**, 67.
Bates, R. (1936). Ibid., **1**, 521.
Bergmann, G. Von (1932). *Funktionelle Pathologie*, Berlin, p. 137 (quoted by Hurst and Simpson, 1934).
Booth, W. G., and Okell, C. C. (1927–8). *Publ. Hlth.*, **41**, 237.
Brodribb, H. S., and Cullinan, E. R. (1936). *Lancet*, **1**, 1237.
Cullinan, E. R. (1939). *Proc. roy. Soc. Med.*, **32**, 933.
Findlay, G. M. (1940). *J. R.A.M.C.*, **74**, 72.
—— Dunlop, J. L., and Brown, H. C. (1931). *Trans. roy. Soc. trop. Med. Hyg.*, **25**, 7.
Fraser, E. M. R. (1935). *British Medical Journal*, **1**, 701.
Glover, J. A., and Wilson, J. (1931). *Lancet*, **1**, 722.
Henderson, M., and Splatt, B. (1942). *Med. J. Austral.*, **1**, 185.
Hurst, A. F. (1940). *Medical Diseases of the War*, London.
—— and Simpson, C. K. (1934). *Guy's Hosp. Rep.*, **84**, 173.
Mateer, J. G., Baltz, J. I., Marion, D. F., and Hollands, R. A. (1942). *Amer. J. digest. Dis.*, **9**, 13.
—— —— —— and MacMillan, J. M. (1943). *J. Amer. med. Ass.*, **121**, 723.
Newman, J. L. (1942). *British Medical Journal*, **1**, 61.
Pickles, W. N. (1930). Ibid., **1**, 944.
—— (1939). *Lancet*, **1**, 893.
Probstein, J. G., and Londe, S. (1940). *Ann. Surg.*, **111**, 230.
Quick, A. J. (1936). *Arch. intern. Med.*, **57**, 544.
—— (1940). *Amer. J. clin. Path.*, **10**, 222.
Roholm, K., and Iversen, P. (1939). *Acta path. microbiol. scand.*, **16**, 427.
Snell, A. M., and Plunkett, J. E. (1936). *Amer. J. digest. Dis.*, **2**, 716.
Soffer, L. J., and Paulson, M. (1934). *Arch. intern. Med.*, **53**, 809.
van Rooyen, C. E., and Gordon, I. (1942). *J. R.A.M.C.*, **79**, 213.
Weichselbaum, T. E., and Probstein, J. G. (1939). *J. lab. clin. Med.*, **24**, 636.
Willcox, W. H. (1919). *British Medical Journal*, **1**, 671.

P. Freud, G. D. Rook, and S. Gurian (*Amer. J. Dis. Child.*, 1942, **64**, 895), who report a case in a female infant aged 3 days, state that there are only five cases on record of herpes zoster in the newborn. Trauma and toxins could be excluded, so that an infectious origin was very probable. As in the other cases of herpes zoster in infants, evidence of pain and discomfort was absent. Complete healing took place in six weeks and there was no scarring.

THE SIGNIFICANCE OF BLOOD-PRESSURE READINGS IN GENERAL SURGICAL WORK

WITH SPECIAL REFERENCE TO THE CARDIAC INDEX

BY

HAROLD DODD, Ch.M., F.R.C.S.

Surgeon to King George Hospital, Ilford, and to the Royal Hospital, Richmond; E.M.S. Surgeon to the London Homoeopathic Hospital

Blood-pressure readings have been made before, during, and after general surgical operations in my practice since 1932. They have proved to be valuable and instructive. They were started with the need to detect and counteract the marked falls of blood pressure that occurred during spinal anaesthesia, and were used in the search for further aids in the detection of poor surgical risks with a view to excluding the necessity for the explanation "the operation was successful, but unfortunately the patient died" (Dodd, 1940). This note attempts to assess the significance of blood-pressure readings in general surgical work in the light of this experience.

Before Operations

The Cardiac Index.—It was from Mr. Ernest Miles that the significance of the Moot-McKesson cardiac index was learned. This estimation is more widely known than formerly, but it is seldom taught, and, because of this, when it is mentioned it meets with some scepticism. The cardiac index is estimated as follows:

The normal systolic blood pressure is 120 mm. Hg and diastolic 80 mm. Hg, the difference—the pulse pressure—being 40 mm. The cardiac index is reckoned by working out the percentage fraction which results by placing the pulse pressure as numerator over the diastolic pressure as denominator. Ordinarily the pulse pressure is 40 and the diastolic pressure 80, giving a fraction of $\frac{40}{80} = 50\%$.

The Significance of the Cardiac Index.—Clinical experience has shown that patients with a cardiac index between 33 and 80% are fair surgical risks, between 80 and 100% and between 25 and 33% they are doubtful and poor operative risks, while above 100 and below 25% no surgical procedure is safe: Miles said that opening a whitlow in such a patient is likely to prove fatal. This cardiac index has proved of assistance in the selection of patients for operation, and also after operations, when the blood pressure has been measured and serious disturbances found. It indicates the need for measures to improve the tone and fill the cardiovascular system —necessities that might otherwise be overshadowed by the problem of surgical diagnosis and the operation. Clinical improvement almost invariably follows these remedies, especially in elderly people, in whom the blood pressure is often around 140/70, giving a cardiac index of 100%. Pre-operative rest in bed for one, two, or three weeks, with a fluid intake of 6 to 8 pints daily and cardiac tonics, approximates these figures to, say, 130/80, and major operations have then been undertaken with consistently uneventful convalescences.

The opinion at present held as a result of these studies is that the blood-pressure figures in themselves mean little; it is the relation of the diastolic and systolic which matters—i.e., the cardiac index; a high or a low systolic blood pressure between 100 and 200 mm. is immaterial to the surgeon considering a major operation so long as the cardiac index is around 50%. Actually, in a period of ten years, during which the blood pressure of all new surgical out-patients has been taken, a systolic pressure of over 180 or lower than 100 has been rare in adults.

Condition of Heart and Blood Vessels

The taking of the blood pressure, apart from yielding the systolic, diastolic, and cardiac index values, gives good data concerning the regularity or otherwise of the heart-beats and, by the strength of the beat, the quantity of the heart output. These features, when noted with the stethoscope over the artery at the elbow, arrest the observer's attention more certainly than the routine clinical examination of the heart and pulse. Considerable variations in regularity and size of the pulse are detected, and the systolic and diastolic readings also sometimes

vary from hour to hour and from day to day, denoting cardiac and vasomotor instability.

Sometimes when the diastolic pressure is being read it will be found that the arterial murmur continues until the pressure in the armlet is zero; this is interpreted as denoting aortic incompetence or a sclerotic or spastic artery, which is a further factor for consideration by the surgeon in a contemplated major operation on an elderly subject.

Illustrative Cases

Case 1: Coronary Thrombosis, ? Acute Abdomen.—A man aged 44 was admitted with an acute abdomen; the diagnosis was obscure: ? an acute gall-bladder, ? an acute appendix, ? an acute pancreatitis—certainly something "unusual." He was a stout, plethoric person. The blood pressure was 140/70, giving a cardiac index of 100%. In view of the uncertain diagnosis and the cardiac inefficiency, no immediate operation was proposed. The next day the picture was still confused; the blood pressure was 100/80, and a coronary thrombosis was considered. Operation was out of the question. Dr. Geoffrey Bourne agreed with the cardiac diagnosis. After a stormy period the patient recovered.

Case 2: Heart Efficient; Gangrenous Cholecystitis.—A man aged 69 was seen with apparently acute cholecystitis and colic. Five years before a partial gastrectomy for cancer of the stomach had been performed. The question was, "Was this a case of gall-stones or a metastasis obstructing the biliary apparatus?" He was in good condition; the blood pressure was 140/85 (cardiac index 64%). Operation was performed forthwith, and a gangrenous gall-bladder obstructed by a stone removed. He made an uneventful recovery.

Case 3: Auricular Fibrillation; Gall-stone Colic.—A woman of 67 was admitted with acute gall-stone colic. The question of immediate operation was excluded when the blood pressure revealed a fibrillating heart and figures of 140/60, giving a cardiac index of 133%. The patient was rested for four weeks. The blood pressure improved to 135/80 (cardiac index 68.75%), and a large stone was removed from the common bile duct. Although the operation was done under a local anaesthetic she had a stormy convalescence with four days of persecution delirium, and the fibrillation returned, but ultimately she recovered.

Case 4: Auricular Fibrillation, Gall-stones, and Jaundice.—A business man of 65 had had gall-stone colic and jaundice shortly before being seen. Operation was needed. His blood pressure was 120/50 (cardiac index 140%). The pulse was irregularly irregular, and there was considerable variation of the output at each systole. The heart was fibrillating. Rest in bed for nearly three weeks restored regularity, and the pressure improved to 140/80 Cholecystectomy and exploration of the common bile duct were performed. Convalescence was uneventful, and in spite of strenuous work (iron and steel trade) no further cardiac irregularity has been noted in five years.

Case 5: Diabetic Gangrene.—A woman with diabetic gangrene of the foot, and a blood pressure of 110/50 (cardiac index 120%), was undergoing amputation above the knee under open ether anaesthesia. She died on the table.

Case 6: Diabetic Gangrene.—A physician friend, J. B., related the following: A patient had diabetic gangrene of the foot. Immediate amputation was advised. The relatives asked for a physician's opinion. "My intuition," he said, "was that she was not fit enough then for the operation, but I could find nothing definite to back up my feeling, when I remembered the cardiac index. The blood pressure was 120/55, giving an index of well over 100%. I explained this to the doctor and surgeon, and they agreed to the delay. And she hasn't died," he concluded.

Case 7: Carcinoma of Stomach.—A man aged 66 was seen in consultation for indigestion which was clearly due to carcinoma of the stomach. He looked reasonably well, and energetically discussed the operation, its cost, time, place, etc. His blood pressure was 60/50 in the left arm and 70/60 in the right. I was puzzled as to the significance of this finding in an apparently fairly normal man. The usual pre-operative rest, transfusion, fluids, etc., were advised. He died suddenly that night.

Case 8: Varicose Veins.—A busy housewife had gross varicose veins. The operation of ligature and injection was advised. Her blood pressure was 140/70. She was rested two days, but it remained 140/70–80, giving a cardiac index of about 100%. Circumstances pressed for early operation, and as the procedure was small and was to be done under a local anaesthetic it was performed, although with uneasiness concerning the cardiac efficiency. She ran a high temperature after operation, and the pyrexia continued for several weeks, with malaise and a small pulmonary embolism as indicated by pain, cough, and blood-stained sputum.

Such has been our unsatisfactory post-operative experience when the cardiac index was less than 33 and over 85%: some complication develops—e.g., abdominal distension, chestiness, pulmonary embolism, delirium, strangeness of manner, or sepsis. When the fundamental cardiac weakness is recognized and is treated by pre-operative rest in bed, a fluid intake of 5 to 6 pints daily, and gentle cardiac tonics—given orally, seldom by injection—these incidents are avoided. When the cardiac defect is found after the operation, then attention is focused on the cardiac and vasomotor condition, while local treatment to the operation area—e.g., meteorism—becomes a secondary consideration. Heart stimulants are given orally, not by injection, to feeble and aged subjects, because in the early days of this study two patients (aged 65 and 67) with carcinoma of the stomach who were being prepared for operation with nikethamide (coramine) 1 c.cm. subcutaneously t.d.s. died suddenly from cerebral embolism. It was considered that a thrombus had passed out of the left auricular appendage into the systemic circulation.

Blood-pressure Readings During Operations

The Anaesthetic.—By taking the blood pressure every five minutes during operations surprising falls and variations have been found, irrespective of the type of procedure, whether major or minor. They occur with all sorts of anaesthesia—a statement based on thousands of readings during the period 1933–43 (Dodd, 1940). The variations in pressure are wide during spinal anaesthesia, somewhat less with general anaesthetics, and much less with local infiltration of novocain or amethocaine hydrochloride (decicain). The progress of the blood pressure is unpredictable. A severe fall in blood pressure is not regarded as an indication of shock, but, taken with other factors, it is helpful.

Blood-pressure-raising Agents.—Remedies directed to the restoration and maintenance of the blood pressure around normal have lessened the post-operative morbidity and also the mortality. Certain drugs have been proved as pressor agents, particularly pholedrine (Dodd, 1942) and methedrine (Dodd and Prescott, 1943), and 30% hypertonic saline 20 to 40 c.cm. (Walker, 1936). Cardiac tonics such as nikethamide, leptazol (cardiazol), digitalis, strychnine, etc., have no pressor effect, while by contrast that of adrenaline and icoral is too violent for clinical use.

Position of Patient on Operating Table.—This affects the blood pressure. When the bridge of the operating table is raised for gall-bladder and kidney procedures a steady fall in pressure ensues, but with the lowering of the bridge the blood pressure recovers. This bridge is painful to patients: pneumatic pillows are more comfortable. Sudden changes from the Trendelenburg to the horizontal position also cause falls in pressure; lifting from the table to the ambulance and thence to the bed is also associated with a fall, which is considerable and recovers but slowly after major procedures.

The Operative Procedure.—Exploration of the abdomen and palpation of the common bile duct are nearly always followed by a fall in blood pressure, and in some cases with weakening and temporary irregularity of the pulse. With a well-planned local and regional infiltration this is largely eliminated. Pulling on the mesenteries or parietal peritoneum to close the abdomen causes a similar fall, as also does packing the intestines into the abdomen. Manipulation of the renal pedicle affects the pressure adversely, while in a radical breast operation the pressure is continuously low, with limited response to the usual dose of pressor drug.

Pentothal during Operation.—The interesting fact was noted that if pentothal in 5–10% solutions (say, 3–5 c.cm.) is injected quickly a prompt fall in blood pressure occurs, which gradually recovers as the respirations strengthen. The safe rate of injection is 1 c.cm. per half-minute.

Death on the Table.—Death on the operating table is an abrupt shock to a surgical team. Only one death has occurred on the table (from a ruptured thoracic aneurysm) when pressure observations were being made. One assistant said that patients "never look like dying" when such readings, and the necessary corrections, are made. With regard to conventional operations without pressure observations, there readily come to mind three deaths on the operating table which were first detected by the surgeon.

Post-operative

Choice of the Remedy in Collapse.—Taking the blood pressure gives an indication of the remedy required by a patient. Thus

a man may be cold and somewhat cyanosed, with a weak pulse, yet the blood pressure be within normal limits. This patient's need is a cardiac tonic such as nikethamide plus oxygen. On the other hand, the pulse may feel average but the blood pressure is below 80 mm. Hg; here a pressor agent is required. Observers who have taken thousands of pressure readings constantly report such findings, and also their inability to estimate the blood pressure by palpating the pulse.

A male, 24 hours after a three-quarter partial gastrectomy for a large gastric ulcer and a duodenal ulcer, collapsed and became unconscious. His respirations were 48 and forcible, the pulse was 160, but the heart-beat was regular and sounded strong at the apex. The blood pressure was 80/60 (cardiac index 33%) and his nails were white. In this case oxygen and a pressor agent to restore the blood pressure were necessary. Both were given, and in five minutes consciousness was regained and recovery followed. The conventional cardiac tonic would probably have been ineffective.

Another finding is that of simultaneous cardiac and pressure weakness or failure. The pulse is feeble and irregular and the pressure low. A combination of nikethamide or leptazol 1 c.cm. and pholedrine 1 c.cm., given together intramuscularly, wields a powerful effect.

Fluid Loss.—Should there have been a considerable loss of fluid, as after gross injuries or extensive operation, then an infusion of blood or plasma is necessary to fill up the circulatory system. Stimulants or saline will not act in this capacity: in fact, continuous saline is harmful to shocked patients because the body has no storage facilities for salt-and-water, which waterlogs the bases of the lungs.

Post-operative Observations.—Post-operative observations of the blood pressure are important after the use of spinal anaesthetics and after the shock-producing procedures. Low readings are found up to four days after operation. Response to pholedrine or methedrine or intravenous hypertonic saline is prompt.

Summary

The Moot-McKesson cardiac index is described and its value indicated in major operations.

Some factors affecting the blood pressure at operations are described.

After operations, the need to give primary attention to the cardiovascular system rather than to the operation area is emphasized.

The help available from blood-pressure readings in the choice of the correct remedy is described.

Continuous intravenous infusions of saline post-operatively in shocked patients are deprecated.

REFERENCES

Dodd, H. (1940). *Lancet*, **1**, 358.
—— (1942). Ibid., **1**, 498.
—— and Prescott, F. (1943). *British Medical Journal*, **1**, 345.
Walker, J. B. (1936). *Brit. J. Surg.*, **24**, 105.

CONTINUOUS ADMINISTRATION OF INTRAVENOUS ANAESTHESIA

A SIMPLE METHOD

BY

F. W. ROBERTS, M.B., B.S., D.A.
Honorary Anaesthetist, the Middlesex Hospital

AND

B. A. SELLICK, M.B., B.S., D.A.
Senior Resident Anaesthetist, the Middlesex Hospital

In view of the increasing popularity of intravenous anaesthesia and the growing number and complexity of devices (Semans, 1941) for its administration, we would like to place on record a method which we have been using at the Middlesex Hospital for more than two years. It is simple to carry out, gives accuracy of dosage, and is economical in materials.

The Apparatus

This is a positive-pressure drip saline infusion apparatus (Fig. 1), consisting of a saline reservoir, drip-bulb and tubing, glass aspiration indicator, needle, and a means of providing positive pressure.

1. *Pressure.*—This is provided as follows: (*a*) *By a hand bulb*—e.g., of a sphygmomanometer or Higginson's syringe. A clip is often needed to prevent leakage back through imperfect valves. (*b*) *By an oxygen cylinder.* A Y-tube is connected in the tubing from the reducing-valve of an oxygen cylinder to the flowmeter. The remaining arm of the "Y" is joined to the shorter tube of the saline reservoir. By restricting the flow from, say, 4 litres a minute to 2 litres, by means of a screw-clip on the tubing which

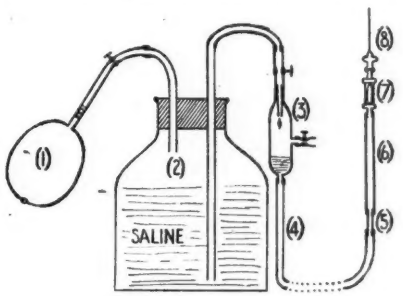


FIG. 1

leads to the flowmeter, enough pressure is built up to drive over the saline (Fig. 2). The 2 litres a minute from the flowmeter can be administered to the patient via a nasal catheter, B.L.B. mask, or in combination with nitrous oxide from a Boyle machine.

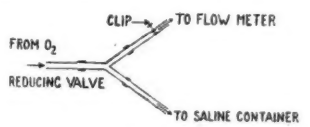


FIG. 2

2. *Saline Reservoir and Rubber Stopper.*—(*a*) The Baxter vacoliter screw-topped saline-bottle has the advantage that it is squat and not easily overturned, and the screw top cannot be blown off. (*b*) Any bottle in which sterile saline for intravenous use is supplied can readily be adapted by fitting a suitable-sized rubber stopper with two holes through it. Two tubes—metal, to prevent breakage—are pushed through the rubber stopper. One of these reaches almost to the bottom of the container; the other ends above the surface of the saline.

3. *Drip-bulb.*—A Murphy or similar drip-bulb is attached to the longer of the two tubes by rubber tubing; a clip on this regulates the flow of saline.

4. *Rubber Tubing.*—The latex type of tubing is the most satisfactory, as air bubbles can be seen through it.

5. *Glass Connexion.*—Apart from joining the latex tubing to the pressure tubing, this will show if blood had diffused back along the tube when the needle was introduced into the vein. If the connexion remains free of blood, only that part of the apparatus distal to it need be sterilized or changed between cases.

6. *Pressure Tubing.*—This is used as it withstands repeated needle puncture without leaking. It should be about 4 to 6 in. in length.

7. *Aspiration Indicator.**—This is a short straight glass tube with a small bulb blown in its centre. There are two metal mounts—one to fit a needle, and the other to fit a Record syringe. The indicator can first be used between syringe and needle (Fig. 3) when

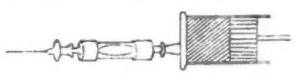


FIG. 3

the induction dose is given. The aspiration test of the position of the needle can be performed without contaminating the syringe with blood. The indicator is then removed and fitted between the pressure tubing and a larger needle.

8. *Needle.*—A short-bevel size 1 (Record) about 1½ in. long is quite large enough (equivalent to about 4 or 5 serum needle).

9. *Arm Splint.*—A piece of wood about 4 in. by 1/2 in. by 4 ft. is padded for half its length. Two domette "tails" are attached to the padding to fix the arm in place.

10. *Tourniquet and adhesive tape* are also required.

Technique

Pressure is raised in the saline reservoir and the regulating clip opened, allowing saline to flow until all air bubbles are removed. The clip is closed, and the level in the drip-bulb is adjusted by the clip on the side tube. The patient is then induced, using up to 0.5 g. of 5% pentothal solution in a 10-c.cm. syringe. For ease of venepuncture and the patient's comfort use the aspiration indicator and a fine needle (Vann Bros.' "evipan" size) (Fig. 3). The

* Also known as "varicose vein mount": obtainable from John Bell and Croyden Ltd.

patency of the airway is maintained by positioning of the patient's head or by the insertion of a soft rubber oral airway (Guedel type); or a short nasopharyngeal tube is passed through the nose. We have found it beneficial to employ supplementary nitrous-oxide–oxygen anaesthesia (see below).

The patient is now transferred to any desired position on the operating table, and one arm is firmly bound to a splint, the unpadded end of which is inserted beneath his shoulder. The tourniquet is applied and the needle inserted into a suitable vein. With the drip turned off, the venous congestion produced by the tourniquet causes blood to diffuse back into the indicator—proof of the intravenous position of the needle. The drip is now started (40 to 50 drops a minute), and the needle is fixed in position by adhesive tape. We have found that the needle is held more securely and lateral movement prevented if a small piece (1 in. by 1½ in.) of tape is placed beneath the needle with the adhesive side uppermost. Two longer pieces are then applied over both needle and tape, securing them to the surrounding skin (Fig. 4).

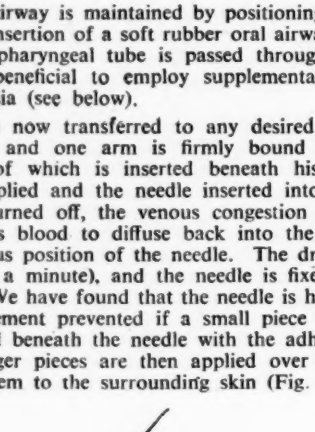


FIG. 4

Further injections of 5% solution of pentothal are made, as required, by syringe and needle into the pressure tubing, which should be pinched on the drip-bulb side during the injection to prevent "backwash" and consequent delay in the passage of the drug to the patient.

Advantages

Positive-pressure drip apparatus eliminates the cumbersome unstable stand required by gravity drips, and as the saline reservoir can be placed quite near the vein, long lengths of tubing are avoided.

The glass aspiration indicator facilitates venepuncture.

Should the needle become dislodged between the injections of pentothal, saline only will be introduced into the subcutaneous tissues. In other methods (Rivett and Quayle, 1940; Macintosh and Pask, 1941) irritant pentothal may so escape.

Accurate doses of pentothal can easily be injected and their full effect quickly assessed. The same concentration of the drug (5%) is used throughout, thus avoiding error due to different solutions.

The absence of Y-tubes joining separate containers of saline and pentothal (Rivett and Quayle, 1940; Thomas, 1942), syringes, multidirectional taps (Rivett and Quayle, 1940; Semans, 1941), and numerous lengths of tubing lessens the weight attached to the arm and hence there is less likelihood of the needle becoming dislodged. More important is the lack of "dead space" (Adams, 1941) in the apparatus we describe; hence there is minimal delay in action of the drug due to "backwash" and uncontrollable dilution.

Supplementary Anaesthesia or Oxygen

Organe and Broad (1938) reported a series of cases in which supplementary nitrous-oxide–oxygen anaesthesia was used. Various other writers have advocated supplementary oxygen (Carraway, 1939; Carraway and Davison, 1941; Davison, 1943). In endorsement of these views we have found that supplementary nitrous-oxide–oxygen anaesthesia is of value because: (1) The total dosage of pentothal required is considerably smaller, hence the degree and duration of post-operative respiratory depression are reduced to a minimum. (2) A continuous visual indication of the patency of the airway and the volume of respiratory exchange is provided by the movements of the rebreathing-bag. (3) The percentage of oxygen can be increased greatly in excess of that found in atmospheric air, thus overcoming anoxia due to shallow respiration. (4) Rhythmical pressure on a rebreathing-bag filled with oxygen provides the most efficient form of artificial respiration should apnoea occur.

REFERENCES

Adams, R. C. (1941). *Proc. Mayo Clin.*, **33**, 519.
Carraway, B. M. (1939). *Anesth. & Analges.*, **18**, 259.
Carraway, C. N., and Davison, T. C. (1941). *West. J. Surg.*, **49**, 514.
Davison, T. C. (1943). *Anesth. & Analges.*, **22**, 52.
Macintosh, R. R., and Pask, E. A. (1941). *Lancet*, **2**, 10.
Organe, G., and Broad, R. J. B. (1938). Ibid., **2**, 1170.
Rivett, L. C., and Quayle, G. (1940). *Proc. roy. Soc. Med.*, **33**, 631.
Semans, J. H. (1941). *J. Urol.*, **45**, 249.
Thomas, G. J. (1942). *Pennsyl. med. J.*, **45**, 467.

A FATAL CASE OF CEREBRAL MALARIA

BY

I. B. SNEDDON, M.B., Ch.B., M.R.C.P.

Surg. Lieut., R.N.V.R.

(From a Naval Hospital)

Cerebral malaria is a rare cause of coma in this country, but with the return of large bodies of our troops from areas where subtertian malaria is endemic this complication may be seen more frequently. It is a medical emergency which often responds well to early treatment, but its gravity can be judged by the mortality of 40% recorded by Sandford, Crawford, and Warr (1940) in a series of 48 cases. The following description of a fatal case is presented as a reminder that malaria should be considered in the differential diagnosis of coma and that, unless treatment is started early, gross irreversible pathological changes ocur in the brain.

Case History

On Sept. 2, 1942, a 28-year-old stoker was admitted to a naval hospital in a semi-comatose state, having been sent from a destroyer whose previous travels were not divulged. He had been suffering from a severe headache for three days, but had not reported this as he had not wanted to miss going on leave. On the morning of admission he had reported sick, complaining of a severe headache, frequent vomiting, and fever. No abnormal physical signs had been found by the medical officer of the destroyer. The patient had lapsed into a semi-comatose state during his journey from the ship to hospital.

On examination he was found to be semi-comatose, but was easily roused by a loud voice or a pin-prick; he was not able to speak, and was incontinent of urine. T. 103, P. 120, R. 28. The skin was dry and muddy-coloured but burning hot. The teeth were tightly clenched. The pupils were contracted and slightly irregular, and reacted sluggishly to light; the fundi showed no abnormality. There was no paralysis of the limbs, and the muscle tone was normal. The deep reflexes were all present, but were sluggish. Abdominal reflexes were present. Plantar responses were flexor. There was no neck rigidity or positive Kernig's sign. A few moist sounds were heard at the base of the right lung. Heart sounds were normal. B.P. 110/70. The abdomen showed no rigidity and the liver and spleen were not palpable.

In view of the possibility that he might have a meningococcal septicaemia he was given 1 g. of sulphapyridine intramuscularly while the following investigations were being carried out:

Urine: Specific gravity 1014, acid; a heavy cloud of albumin, blood-positive chemically, numerous red blood corpuscles and granular casts seen. *Blood:* Urea, 42.1 mg. per 100 c.cm.; sugar, 85 mg. per 100 c.cm.; leucocyte count, 14,200 per c.mm. (polymorphonuclears 77%, lymphocytes 12%, large mononuclears 11%). *C.S.F.:* Lumbar puncture revealed clear fluid under normal pressure, containing 3 cells per c.mm., no excess of globulin, 50 mg. of protein and 92.8 mg. of sugar per 100 c.cm.

In view of the negative findings it was thought that the diagnosis lay between septicaemia and cerebral malaria. Blood films were therefore taken; numerous ring forms of *Plasmodium falciparum* were found, but no crescents. An intravenous 5% glucose-saline drip was started immediately. 10 gr. of quinine dihydrochloride together with 10 min. of 1/1000 adrenaline hydrochloride was dissolved in 20 c.cm. of water and given slowly by a hypodermic syringe into the rubber tubing of the drip apparatus. The intravenous glucose-saline was continued throughout the night, and on the morning of Sept. 3 the patient was fully conscious and able to recognize his relatives. His general condition seemed much improved (T. 99.2°, P. 100), but persistent vomiting prevented the administration of fluids by mouth. A further dose of 10 gr. of quinine dihydrochloride was given in the same manner as before. His condition continued to improve during the day. A blood count showed 4,400,000 red cells per c.mm.; haemoglobin 100% (Haldane); and 18,000 leucocytes per c.mm. On Sept. 4 his temperature rose to 104°; his appearance was more icteric, and he again lapsed into coma. Lumbar puncture was repeated and 10 c.cm. of clear fluid was removed. 10 gr. of quinine was given intravenously and a slow-drip blood transfusion was started. No improvement resulted from these measures, and by the morning of Sept. 5 his condition had greatly deteriorated. The blood urea was 118 mg. per 100 c.cm. His temperature had risen to 105°, and despite frequent tepid sponging it remained between 104° and 105° until death occurred on Sept. 6.

At necropsy the salient features were as follows. Brain: Congestion of the vessels on the surface of the cerebral hemispheres; numerous petechial haemorrhages present throughout the brain, but more so in the cerebral hemispheres than in the brain-stem. Spleen: Enlarged to twice normal size, dark, soft, and flabby; pulp purplish

grey in colour, with a semi-fluid consistency and general loss of structure. The liver was also enlarged, and showed a purplish-grey friable cut surface. Hypostatic congestion was present at the bases of both lungs.

Dr. W. W. Woods, Consultant Pathologist to the Navy, reported on sections of the brain, spleen, liver, and kidney as follows:

"In the two pieces of brain many of the capillaries contain numerous minute nodules of pigment which is negative to Perles's test for iron; this is in keeping with its being malarial pigment. Further, the general configuration of the numerous well-defined dots of pigment is strongly suggestive of malaria. Some of the pigment appears to be in red blood corpuscles, where it ought to be, but much of it seems to lie free in the lumen of the capillaries, perhaps because the corpuscles containing it are very indistinct. Also, I found it impossible to stain the bodies of the parasites themselves, in which the pigment is presumably contained; in a very few instances I thought I could see the faintly stained body of the parasite around the dot of pigment. I can only presume that this failure to demonstrate the parasites is due to post-mortem degeneration or poor fixation, or both. In the white matter of the piece of cerebrum there are numerous petechial haemorrhages, some of them obviously perivascular and some of them ring-haemorrhages; there are very few in the grey matter and a considerable number in the more heavily myelinated part of the other piece of brain, whose site I fail to recognize. In spite of the failure to show the bodies of the parasites, I think there can be no doubt but that this is a specimen of cerebral malaria.

"There is abundant pigment in the spleen and—which I think is more significant—it is abundant in the Kupffer cells in the liver and free in the sinusoids, and is negative to the test for iron. There is very little pigment in the glomeruli of the kidney. I could not see the actual parasites in these three tissues."

Commentary

Lack of knowledge of the movements of the man's ship added to the difficulty of diagnosis in this case. It was afterwards ascertained that he had been in Sierra Leone two weeks before he was taken ill. The diagnosis was reached largely by exclusion, but on reviewing the presenting symptoms and signs they do fit in well with those of other cases which have been described. The comatose state with no abnormal signs in the central nervous system, the muddy sallow complexion, the moderate leucocytosis with a raised monocyte count, are all commented on by Sandford, Crawford, and Warr (1940). In the present case one striking feature was the pin-point pupils.

Differential Diagnosis.—The differential diagnosis includes, of course, all the causes of coma, but those particularly apt to cause difficulty are:

1. *Alcoholism.* The drowsy irrational state with slurred speech found in the early stage of cerebral malaria is very suggestive of alcoholism, as has been noted by Minett and Bernfield (1937).

2. *Meningitis*, in particular the fulminating meningococcal infections, may also be simulated. Wright (1941) stresses the fact that lumbar puncture should be carried out in every case, as cerebral malaria may cause neck rigidity, and the finding of *P. falciparum* in the blood does not exclude a coincident meningitis.

3. *Cerebral haemorrhage, thrombosis, or embolism* may also be mimicked by cerebral malaria. Embolic phenomena may be produced by malarial parasites.

The conclusive proof of the diagnosis in this country is the finding of *P. falciparum* in the blood. Usually an infection severe enough to cause coma is a heavy one, and a blood slide will show numerous parasites. A few cases, in particular those with an embolic onset, may have only a light infection, and parasites in the peripheral blood may be difficult to find.

Treatment.—Treatment should not be delayed while further diagnostic procedures such as sternal puncture are carried out. If the history and physical signs are suggestive quinine should be given at once. This may be a life-saving measure, and is helpful in diagnosis if a favourable response is obtained.

The fatal outcome in this case was disappointing, particularly after the dramatic response to quinine in the first 24 hours. However, it serves to impress the fact that if treatment is to be successful it must be prompt. The delay in treating the malarial infection before the complication of coma supervened was due to the patient's own foolishness in concealing his illness: in most cases malaria should be diagnosed and treated before pernicious complications occur. In this case quinine dihydrochloride was administered solely by the intravenous route. The dosage used—i.e., 10 gr. daily—was higher than the 5 to 7 gr. advocated by Manson-Bahr (1942). No toxic reactions were seen that could be attributed to the intravenous quinine, but care was taken to give it slowly through a hypodermic needle into the intravenous drip apparatus. Adrenaline hydrochloride, 10 min. of 1/1000 solution, was always given at the same time. Intramuscular quinine is advocated in these cases by Wright (1941), but he does not give any reason for avoiding intravenous injection. Fawcitt and Walters (1941) recommend a transfusion of reconstituted blood serum as a detoxicating and stimulant measure, and Manson-Bahr (1940) recommends blood transfusion if there has been great blood destruction. Lumbar puncture, with removal of 10 c.cm. of cerebrospinal fluid, had no effect in relieving the coma in the late stages of this case, but in view of the marked pathological lesions of the brain found at necropsy this is not surprising.

I wish to express my thanks to the Senior Medical Officer of this hospital for permission to publish the case, and to Dr. W. W. Woods, Consultant Pathologist to the Navy, for his report on the pathological sections.

REFERENCES

Fawcitt, J., and Walters, A. H. (1941). *British Medical Journal*, **1**, 14.
Manson-Bahr, P. H. (1940). *Manson's Tropical Diseases*, Cassell, London.
—— (1942). *British Medical Journal*, **2**, 489.
Minett, J. S., and Bernfield, A. J. (1937). Ibid., **2**, 1120.
Sandford, C. H., Crawford, P. T., and Warr, O. S., jun. (1940). *Ann. intern. Med.*, **14**, 72.
Wright, F. J. (1941). *E. Afr. med. J.* **18**, 226.

Medical Memoranda

Suppurative Mastoiditis in an Infant

I have been much impressed by Mr. P. W. Leathart's paper entitled "A Common Cause of Diarrhoea, Vomiting, and Dehydration in Infants" (Aug. 7, p. 168). It struck me as having been based on sound reasoning and wide experience in a field apparently little recognized, but one of considerable importance. Although parenteral infection is universally known to be an important cause of "D. and V." in infants, only too often it gives place to the diagnosis of gastro-enteritis after the more easily detectable and better-known sites of infection have been excluded. I would like to cite the case of an infant recently admitted to the Southend General Hospital. Besides being a practical example of the point made above, this case tests the truth of most of the criteria laid down by Mr. Leathart for enabling a diagnosis of suppurative mastoiditis to be reached in the ward instead of in the post-mortem room. It is to be regretted that the diagnosis suspected in this patient had to be confirmed in the latter situation instead of on the operating-table. It may be hoped, however, that the lesson learned has helped to offset a fatal end-result.

HISTORY OF CASE

The baby was first seen on July 27, 1943, with a history of vomiting after feeds since birth. Apart from rapid delivery, the previous history was negative. His birth weight was 6½ lb. and he was breast-fed. Stools were "loose" but otherwise normal. Examination revealed a healthy infant, weighing 7 lb. 14 oz. No abdominal mass was felt, nor was peristalsis seen. He was admitted for observation and weaning, and was discharged a fortnight later, having gained 1 lb. and having been taking five milk feeds daily without vomiting.

He was readmitted on Oct. 30, aged 4½ months. The mother stated that for one week he had vomited after every feed, that he "pumped it up," and that much clot was present in the vomit. As previously, examination was entirely negative. He looked a healthy, well-developed infant, and weighed 12 lb. 14 oz. He fed eagerly, even greedily, and was given boiled water and chloral before feeds. Vomiting was completely controlled after five days, while weight was gained after a small initial drop. During this time the stools remained normal in frequency and colour. Nov. 6: Weight 13 lb. 1 oz., feeding well but greedily. Nov. 11: Pyrexia (100° F.) noted; stools, though not frequent, were green, and vomiting occurred once; general condition good. From this time onward a remittent temperature to 102.4° was maintained; stools were frequent, green, and offensive (up to 7 in 24 hours), with occasional vomiting. The infant looked pale, but lay quietly and showed no signs of dehydration. Glucose-saline was given by mouth combined with a course of succinyl-sulphathiazole.

Meanwhile investigations were carried out. Radiographs of chest, examinations, and culture of the urine were negative. Blood examination showed Hb 84%, W.B.C. 13,600, with 59% polymorphs. Culture of stools revealed no pathogenic organisms, except on the second occasion, three days before death, when a few colonies of *B. proteus* were found.

Nov. 18.—In spite of treatment, which included restriction of everything by mouth to boiled water, glucose-saline, and amino-acids (in the form of casein hydrolysate), a slow subcutaneous normal-saline drip, and two courses of succinyl-sulphathiazole, the little patient was obviously going downhill. On examination he lay quietly, with the head persistently turned to the left, so that a bald patch formed over the left parieto-occipital region. He was irritable, and any examination caused him to cry, but light pressure over either mastoid was not especially resented. The right ear was noted to be pushed forward as compared with the left, but the surrounding skin was neither red nor oedematous.

Three observers, including a surgeon, who examined the drums, pronounced them normal. At no time was any discharge seen. The glands in the right posterior triangle were found to be palpable, in contrast to the left, but were not greatly enlarged or tender. The diagnosis of bilateral suppurative mastoiditis was considered, but the paucity of localizing signs did not seem to merit surgical intervention. Conservative treatment was continued. The patient went steadily downhill, and died on Nov. 25.

Necropsy revealed extensive bilateral suppurative mastoiditis, more marked on the right side. The alimentary tract, apart from distension of the small intestine, appeared normal. There was no injection of the mucous membrane or prominence of Peyer's patches. The lungs were congested and oedematous. The meninges and superficial cerebral vessels showed considerable congestion. Dehydration was not a prominent feature.

COMMENTARY

It is felt that had bilateral mastoidectomy been undertaken the infant's life would probably have been saved. The reasons for making this statement and the salient features of the case may thus be summarized: (1) A healthy infant who is a greedy feeder vomits as a result of the latter. Vomiting takes place in the horizontal position, and this, plus the manner of feeding, invites entrance of vomit and milk into the Eustachian tubes. (2) For no apparent reason remittent pyrexia, diarrhoea, and vomiting make their appearance. (3) Investigations prove negative, and there is no response to treatment, including chemotherapy. (4) A bald patch forms on the left side, while the right ear is pressed forward as compared with the left, and the glands in the right posterior triangle are found to be enlarged. (5) A steady downhill course ensues, ending fatally, with post-mortem findings of extensive bilateral suppurative mastoiditis.

I wish to thank Dr. R. Sleigh Johnson for his permission to publish this case.

D. S. LEWES, B.M., M.R.C.P.
Medical Registrar, Southend General Hospital.

Sulphathiazole Insufflations as a Treatment of Gonococcal Vaginitis

Under present war conditions any method which promises well in the treatment of gonococcal lesions in the female should be made known without the customary prolonged and exhaustive private investigation. No claims are made, no conclusions or apologies offered, and no recriminations will be necessary if yet another treatment eventually proves ineffective.

There is nothing new about the treatment of gonococcal lesions in the female by sulphapyridine, sulphathiazole, and allied preparations as given orally. The results are not well known, but in many instances are disappointing. The chronic cases seem particularly resistant. The insufflation of "picragol" powder into the vagina for trichomonad infestations has been established, and is widely known. The combination of insufflation with sulphathiazole powder does not seem to have been suggested to date. My own experience with sulphathiazole insufflations in the gynaecological out-patient department of Sir Patrick Dun's Hospital, Dublin, in cases of chronic and subacute gonococcal vaginitis and endocervicitis, has been so dramatic that I draw attention to it so that others may, if they approve, put the plan to the test.

The treatment consists of the bi-weekly insufflation of 5 to 7 g. of powdered sulphathiazole with a "picragol" insufflation apparatus and following the directions for its use. No oral chemotherapy or other treatment has been employed at the same time. In brief, the cases treated have been those of the troublesome subacute and chronic proved gonococcal variety which have defied every usual remedy. In each case three insufflations, as described, have caused almost complete cessation of all discharge and soreness. Such slight discharge as may then still be present is clear and would be regarded as normal but for the previous knowledge of the case.

This result seems too good to be true, and may be so. The truth or otherwise of the early results can be readily and simply put to the test. The principles on which the treatment, if successful, would depend are well known and need no explanation here.

O'DONEL BROWNE, F.R.C.P.I., F.R.C.O.G.
King's Professor of Midwifery, Trinity College, Dublin.

Reviews

MEDICAL MYCOLOGY

An Introduction to Medical Mycology. By George M. Lewis, M.D., and Mary E. Hopper, M.S. Second edition. (Pp. 342. $6.50.) Chicago: The Year Book Publishers Inc. 1943.

In these days of authorized economy standards it is refreshing to meet with a volume in which the American skill in book production is allowed to have its head. The second edition of Lewis and Hopper's *Medical Mycology* is well up to the usual transatlantic level. We are glad that, in spite of the seriousness of the times which weighed upon the authors when considering republication, they have seen their way to producing this delightful volume and to embellishing it with two excellent coloured plates, which are a novel feature. As is customary in new editions, expansion has taken place and a few gaps in the original work have now been filled up.

It is beyond question that medical mycology grows in importance from year to year, and especially for the dermatologist. Perhaps the problem of greatest practical moment in the whole subject is that of epidermophytosis of the feet, popularly known as "athlete's foot." This no doubt is quite common, but during the last few years it has become fashionable to diagnose almost every inflammatory condition of the skin of the toes and sole under this label without any pathological proof, either from microscopical examination of fresh tissue or from cultural tests, of the presence of the epidermophyton. For this reason vast numbers of cases of simple dermatitis in these regions have been aggravated by the use of strong fungicides. We are glad to find that Drs. Lewis and Hopper are strongly of opinion that the diagnosis of epidermophytosis should never be made without laboratory confirmation. The same remarks apply, with even more force, to the secondary eruptions which sometimes occur in conjunction with epidermophytosis and which are known as dermatophytids or trichophytids. They say that these are diagnosed much too often. The chapter on epidermophytosis deserves careful study by all practitioners, especially perhaps by those, like the medical officers of the Forces, who have charge of large numbers of people living together in camps or institutions.

A new disease, which did not receive notice in the first edition, is histoplasmosis. This is a rare but usually fatal disease that occurs in Central America, characterized by hepatosplenomegaly, and is interesting because clinically it resembles leishmaniasis. Histoplasmosis is also noteworthy because it appears to be only the second example of a fungoid infection which does not primarily affect the skin; the first one to be differentiated was the *Cryptococcus histolyticus*, which affects the nervous system. The recommendation made above, that medical men in general should study the chapter on athlete's foot, applies really in equal measure to the whole of this excellent volume.

GENETICS OF THE MOUSE

The Genetics of the Mouse. By Hans Grüneberg, Dr. Phil., Dr. Med. (Pp. 412; illustrated. 30s.) Cambridge: University Press. 1943.

In the field of genetics it is difficult to draw a line between pure and applied research. Small, cheap, rapidly reproducing animals present manifest advantages, and for many purposes must be the standard material of the investigator. But discoveries relating to larger animals may be no less fundamental, and research on any species, variety, or breed may on occasion contribute to the advancement of the subject as a whole. Man himself is not excluded. For example, more is known about geographical variations in the distribution of the blood-group genes than is known in the case of any other genes, whether plant or animal.

In this admirable book Dr. Grüneberg points out that, though the mouse is the best-investigated mammal, the omission of all results obtained from it would hardly affect the textbooks as

regards chromosome theory, population genetics, or evolution. But in developmental genetics, in physiological and pathological researches on the mode of action of genes, we should lose some of our best examples. This is the particular contribution of the mouse (though others must not be overlooked—for example, cancer studies and the genetics of resistance to infection). Large numbers of hereditary variations have been found, providing a rich field for the investigator, of whom one of the best known is Dr. Grüneberg himself.

The condition "myelincephalic blebs" may be chosen as one of many examples. A single gene is responsible for end-results which are highly diverse in kind and degree. It induces defects of the eyes ranging from slight atrophy of the eyelids to total disorganization with absence of the optic tract and involvement of the skull; foot anomalies, such as syndactyly, hypodactyly, polydactyly, and amputation; failure of hair growth in the saddle region. Extensive studies by several investigators, utilizing such techniques as the observation of the unharmed developing embryo through the transparent uterine wall, have elucidated much of the mechanism. Very briefly, a normal process, the oozing of cerebrospinal fluid through a temporary foramen in the fourth ventricle, is exaggerated. Blebs are produced which are guided by mechanical forces along the curvatures of the body to resting places where they are absorbed, usually after affecting organs which happen at the time to be differentiating in the neighbourhood. Modifying factors, known to be potent, act by determining the paths taken by the fluid.

It is clear that the pathologist is here presented with a fine field for study, and it is probable that in the future many a human problem can be illuminated by work on the mouse. We hope that this book will have a wide circulation. It is authoritative, well arranged, as clear as a complex subject permits, and an excellent guide to the literature. Apart from the difficulty of forgiving Dr. Grüneberg for the dreadful word "intrastomachal," it is hard to find anything to criticize. The illustrations are excellent, and the book is admirably produced.

HOME SECURITY

Fire Protection and A.R.P. Year-Book 1943-44. (Pp. 304. 7s. 6d., post free.) London: Lomax, Erskine and Co. Ltd.

Year-books mostly inspire a great respect for the profession or institution whose interests they serve, but this year-book does so in an exceptional degree. The whole subject is so new. It seems only yesterday that men were feverishly digging trenches in London squares by torchlight and trying out taxi-cabs converted into fire engines, and here the science of fire control and prevention is expounded in the most scientific and methodical manner. The compilation is indicative of the vigilance and high purpose of a service which has enlisted the enthusiastic co-operation of hundreds of thousands of people who had never expected to apply a first-aid dressing or to handle a rubber hose except for gardening. We may wonder whether the logarithmic equations given for such matters as the delivery of water in pipes or the velocity of bombs will mean very much to the average civil defence worker, but there is no end of information to be picked up—as, for example, that for complete protection against a one-ton bomb a thickness of 6 ft. 7 in. of reinforced concrete is necessary, and that for four houses well alight a thousand gallons of water a minute must be applied. One admires the N.F.S. and A.R.P. officers also for their absorbent capacity for regulations. A list is given of the statutory rules and orders covering, roughly speaking, A.R.P. since the war began. There are 240 of them, without counting those which have been revoked. The N.F.S. general regulations issued in 1941 have since been amended by twelve new sets of regulations. Standard specifications for A.R.P. equipment number 49.

This compact book contains a directory of N.F.S. and A.R.P. officers, maps of the fire regions, schedules of equipment for first-aid and rescue parties, an index of proprietary and trade names, a bibliography of war gases and decontamination, not to speak of a list of great fires since that of Alexandria, and a "perpetual" black-out calendar for this and subsequent years. The word "perpetual" has an ominous look, and we hope it will soon be proved a slip of the pen.

Notes on Books

MISS EVELYN C. PEARCE'S *Textbook of Orthopaedic Nursing* appeared first in 1927 with a foreword by Sir Robert Jones and an introductory chapter by Dame Agnes Hunt. In reviewing critically the second edition we said that the information given was accurate and up-to-date and that the book could be well described as "Elementary Orthopaedics for Nurses." For a third edition Miss Pearce has taken pains to preserve the simplicity of the original work, and has kept the emphasis, as hitherto, on the need for care and observation. The author has long been known as one of the most successful teachers in the nursing profession, and the new edition of this book with its excellent illustrations will no doubt make a wide appeal to the many women who intend to take up a branch of surgical nursing, which grows in importance every year. It is published by Faber and Faber at 8s. 6d.

The Industrial Health Research Board of the M.R.C. has issued as No. 1 of a popular series on Conditions for Industrial Health and Efficiency a pamphlet *Ventilation and Heating: Lighting and Seeing* (H.M. Stationery Office; 3d.). During the war there has been much evidence that the results of research into industrial health are not widely enough known and appreciated. This well-written and attractively produced pamphlet is not intended for experts, but has been compiled in order that the main facts discovered by research workers may become common knowledge to any interested person in industry, whether manager or worker. The Board proposes that in future the results of any important new research in industrial health shall be published both in a detailed scientific report and also in a short non-technical form in this series of pamphlets.

Preparations and Appliances

A NEW FORM OF SPLINT PADDING

Dr. W. O. SPENCE writes from the Salisbury General Infirmary:

Whether it be in the country practitioner's surgery or in a city ambulance's equipment very little attention seems to be given to the provision of adequate padding in the first-aid use of splints. Mr. Charles Harris, M.B.E., Commandant of the Wilts 5 Detachment of the British Red Cross Society, has made and patented a simple universal splint pad, constructed out of sponge rubber, on the lines illustrated in the diagram.

The chief advantages of this padding are as follows: (1) It is adaptable for use with any form of limb splint, whether of flat or "gutter" type; (2) it is rapidly secured in position by rubber bands; (3) it moulds itself comfortably to the limb as the fixing bandages are tightened (unlike the padding so frequently seen sewn on to wooden splints presenting a convex surface to the limb); (4) it is very easily and quickly cleansed when stained with blood, etc.; (5) it can be used time and again without deteriorating.

FIG. 1.

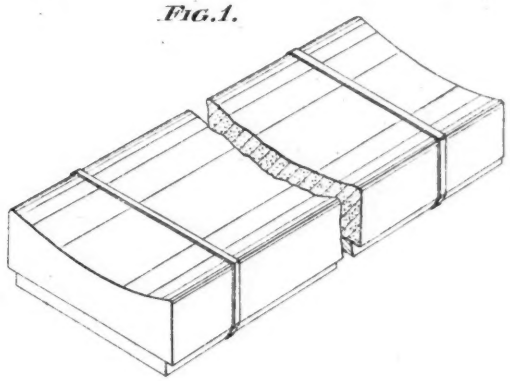
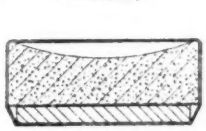


FIG. 2.



For splinting the upper limb during transfusion by the intravenous drip method I have found this padding particularly useful, and can recommend it as a valuable addition to our general hospital equipment.

BRITISH MEDICAL JOURNAL
LONDON
SATURDAY DECEMBER 25 1943

TETANUS IMMUNIZATION

It has long been an attractive idea that when a patient is exposed to imminent risk of infection we might give immediate protection with antitoxic horse serum and—while he is safe under this umbrella of passive immunity—so contrive that active immunity should develop rapidly before the passive protection faded. In 1939 the unhopeful opinion was expressed[1] that "combined active and passive immunization in human medicine is not feasible, the two types of immunization being incompatible with each other." Yet Ramon confidently stated some years ago that the goal had been reached by the method of "sero-vaccination." Downie, Wilson, and fellow-workers[2] shrewdly reviewed Ramon's data and arguments as applied to diphtheria, and showed that the experimental results did not unreservedly support his hypothesis. They nevertheless felt that there might be a place for the simultaneous administration of antitoxin and prophylactic, with the important proviso that we ought to recognize and provide for the gap that must occur after the passive immunity has waned and before active immunity has grown. From carefully controlled observations on volunteers they concluded that for diphtheria the gap could be safely bridged. Fulton and co-workers[3] estimated that this danger period of intermediate low immunity would be over in six weeks. In the schools where diphtheria occurred they swabbed all the exposed children, isolated the carriers, and allowed the other scholars to continue their routine. All exposed children received about 400 units of antitoxin as well as 0.1 c.cm. of A.P.T. A month later 0.3 c.cm. was given. Two weeks later—i.e., six weeks after the swabbing and combined immunization of the children—the carriers returned to school and mixed freely with their fellows. The procedure was apparently effective, for no further cases occurred.

In tetanus the same general considerations apply. The wisdom of active immunization in advance of exposure is generally accepted, and almost all Allied soldiers are thus protected. In Germany, Wolters[4] urged active immunization with two spaced doses of tetanus-alum-toxoid, but the procedure does not seem to have become popular. We may safely assume that the course of two immunizing injections of tetanus toxoid with a six-weeks interval—followed by yearly reinforcing ("boosting") doses of the prophylactic given to recruits joining the British Army—confers a high degree of protection, though a few cases recently reported indicate that this immunity may not be high enough to safeguard against every possible risk the soldier runs on active service. There is no unanimity, however, about the best method of giving a man protection against tetanus when wounded. The Americans give only toxoid to their wounded men who have been immunized before. We have recently[5] called attention to Zuger's results, which suggest that this procedure is good, but maybe not good enough. A secondary stimulus—the injection of prophylactic into a person previously immunized—causes a dramatic rise of antitoxin titre, but it is doubtful if even the most delicate technique would detect this rise earlier than the third day. During this period the toxin may in case of infection "outpace"—to use Colonel Boyd's expressive term—the antitoxin-making mechanism, and attach itself, probably indissolubly and fatally, to the susceptible local nerve elements.

The British plan of giving antitoxin to all wounded men can be accepted as sound, on the evidence of the 1914–18 war. The Americans use a different and interesting method. If evidence is not at hand that a wounded soldier has been actively immunized he is given a prophylactic dose of antitoxin; he also receives toxoid. If he is in the Army he gets at the same time as the antitoxin the first of three injections of tetanus toxoid given three-weekly; if in the Navy, the first of two doses of tetanus-alum-toxoid, the second being injected four weeks later. Cooke and Jones[6] have examined this combined passive–active procedure. They had under observation 9 children suffering from tetanus and 39 healthy children. The children in one group were given passive immunity with 10,000 units or higher doses of tetanus antitoxin; but multiple injections of tetanus toxoid the week after did not result in active immunity for many weeks, nor in that period did they so sensitize the children that another injection could cause a secondary stimulus effect, with the rapid production of antitoxin. To each child in another group a dose of 10,000 units of tetanus antitoxin was given, and then fortnightly injections of tetanus toxoid. Some of the children received the first of these at the same time as the antitoxin, and continued thereafter with an injection every two weeks; in others the first of the series of injections of toxoid was given not at the same time as the antitoxin but a fortnight later; in others the first two toxoid injections were omitted, the children receiving their initial dose four weeks after the antitoxin. The striking result was that the first rise of antitoxin due to the development of active immunity occurred in all groups at about the same time—ten weeks after the injection of the antitoxin. With the doses of antitoxin and the intervals chosen in these experiments no advantage was gained by giving the prophylactic at the same time as the antitoxin. In the Wilson-Downie-Fulton diphtheria investigations the alum-toxoid, though injected at the same time as the antitoxin, still apparently played the vital part of primary stimulus and prepared the way for the excellent response to the second injection of alum-toxoid three weeks after the first. This discrepancy between the diphtheria and tetanus attempts to achieve a measure of what the Americans have called "duplex" immunity may be explicable on a quantitative basis. Mixtures of toxoid and antitoxin, used with much success in the early history of immunization against diphtheria, were effective only when the amount of antitoxin was minimal and carefully adjusted to the amount of toxoid present. Over-neutralized

[1] *J. Amer. med. Ass.*, 1939, **113**, 1884.
[2] *British Medical Journal*, 1941, **2**, 717.
[3] Ibid., 1941, **2**, 759.
[4] *Z. Hyg. InfektKr.*, 1942, **124**, 326.
[5] *British Medical Journal*, 1943, **1**, 76.
[6] *J. Amer. med. Ass.*, 1943, **121**, 1201.

mixtures did not immunize, the toxoid being "blanketed" or neutralized by the excess antitoxin. This presumably occurred in the Cooke-Jones observations. Their healthy children as well as the tetanus patients had very large doses of antitoxin, and in consequence could obtain no immunizing benefit from the synchronous toxid prophylactic.

On a review of the whole evidence there appears to be an inescapable risk in combined active and passive immunization for the prevention of tetanus. If the dosage of antitoxin is adequate to protect against a heavy infection (for which we must always be prepared), then the dose of toxoid given synchronously with the antitoxin is likely to be ineffective as an active immunizer. If, on the other hand, the dose of antitoxin is optimal—i.e., minimal—the amount circulating in the blood stream may have dwindled to a dangerously low level well before the commencing active immunity has marched far enough to become effective. Animal experiments and the recent diphtheria investigations suggest that there will always be this period of low-level immunity following "combined" protection. Experience may show that for a disease with such a variable incubation period as tetanus this intermediate phase incidental to the combined method carries with it a material risk. It is of interest that this view has now gained utterance in the U.S.A. The author of a recent "Answer" in the *J.A.M.A.*[7] writes: "It must, however, be borne in mind that the formation of antibodies consumes time. For this reason it is always good judgment in the presence of badly macerated tissues to give immediately a prophylactic dose of antitoxic serum while waiting for the effect of the boosting dose of toxoid. . . . There will be occasions when it will be wise to employ the antitoxic serum in addition to the toxoid immunization."

ROEHAMPTON AND REHABILITATION

Roehampton, the name of a small village in Surrey, first came into history during the last war, when the Roehampton House estate was converted into Queen Mary's Convalescent Auxiliary Hospital and became a centre for the manufacture and fitting of artificial limbs. Of 41,050 men who lost a limb or limbs in the last war 26,262 were treated at Roehampton for the supply of their first, and in many cases also their second, artificial limb. About seven years after the armistice, by which time the bulk of the first and duplicate limbs had been supplied to those who had suffered in the war, Roehampton was extended to accommodate general surgical and medical cases from the Ministry of Pensions hospital at Shepherd's Bush and facial cases from Queen Mary's Hospital at Sidcup, but it still remained primarily an institution for the benefit of ex-Service men who had lost limbs. All the surgeons of the Ministry of Pensions attached to the fourteen limb-fitting centres in various parts of the country were trained at Roehampton, and here also notable progress in design and manufacture has been made. The modern artificial limb, thanks very largely to what has been done at Roehampton, is a light and simple construction, permitting leg movements scarcely distinguishable from the natural gait. The making and fitting of such limbs is a highly specialized craft, and it is not always appreciated how it can reduce the time-lag between amputation and a man's return to more or less normal life and employment. It is not merely a question of the mechanical adjustment of a prosthesis: it is a question of re-educating a faculty, and often of reviving a spirit which may have undergone something akin to the physical mutilation. Provision is made at Roehampton for occupational therapy, with gymnasium and workshops, and for the economic, educational, and recreational re-establishment of the individual.

Gradually the work has been extended to amputation cases among civilians, in the first instance railwaymen and miners. Since the autumn of 1936 over 3,000 civilian limb-fitting cases have been dealt with under this extension of Roehampton's activities. Arrangements have been made with the Ministry of Labour and National Service for the treatment of cases falling within its rehabilitation scheme for civilians, with the Board of Education for facilities for children of school age, and with the Ministry of Health for pre-school children, mostly congenital cases. In fact Roehampton has developed from a hospital exclusively for the provision of artificial limbs for men wounded in the wars to a general supplying centre for all who need this orthopaedic service. Just as in total war the difference between soldier and civilian wears thin, so Roehampton has shown how the work of treatment and rehabilitation can cover all alike, and not only war casualties, but the accidents of industry and transport. When the present war broke out Roehampton made preparations to meet the expected new demands, and people of every category, Service and civilian, who have lost limbs have been fitted. Seventeen new wards have been built, with ancillary buildings—indeed, to all intents and purposes a new hospital has been put up near the old. The Ministry of Pensions has doubled its bed accommodation at Roehampton since 1939.

Roehampton is now seeking a still wider service, for which purpose it has recently built, at a cost of over £12,000, a large extension to its limb-fitting centre with demonstration theatre and consultation rooms; and the factories themselves, which are immediately adjacent to the limb-fitting centre and hospital wards, have been much enlarged. The idea of the executive is that a further stage in its development should be as a centre for the teaching of medical graduates of the Allied nations, many of whom are now in England, in the methods of artificial-limb manufacture and fitting, so that the Roehampton experience may in due course be carried into all the countries of Europe and help to alleviate the terrible legacy of post-war crippledom.

PSYCHIATRIC IMPLICATIONS OF SURGERY

The familiar procedures of the surgery, the clinic, and the hospital, which are daily routine for doctor and nurse, may have surprising effects on the patient, and we must be prepared to analyse repercussions in the world of fantasy as well as in that of reality. Strong men may faint on venepuncture and intelligent women show intense anxiety with fear of suffocation and death in the process of submitting to a basal metabolism test. Some patients make satisfactory adjustments to life after serious operations, while others make poor adjustments after minor ones.

[7] *J. Amer. med. Ass.*, 1943, **121**, 571.

Michaels[1] has considered the problems encountered by a group of medical social workers in their work with surgical patients, and writes interestingly of the psychiatric implications of surgery. Some of the factors determining the patient's reaction are the type and purpose of the operation, the structure and organization of the personality, the psychosexual development, the age of the patient when the operation is performed, and the organ involved in the operation. An emergency or life-saving operation may be better borne than a palliative or cosmetic procedure. The personality of the patient is a significant factor for the outcome of the operation, which will in some measure reflect the same pattern of reaction as previous traumatic experiences. An individual whose feelings are predominantly of a distrustful suspicious nature may come to look upon the operation as having deleterious effects upon him, even to the point of regarding himself as an experimental guinea-pig. Psychosexual factors, based on fears of attack or assault, are more important in women than in men, and for this reason women react less well to operations and more often develop post-operative psychoses. Traumatic events appear to be most harmful during the first six years of life, at puberty and the climacterium, and whenever possible operation should be avoided at these epochs. Nothing could be more misguided than the prevalent view that operations such as circumcision and tonsillectomy are without effect on the personality when performed in the early years of life. Finally, it should be noted that the organ involved plays an important part in the fantasies of the patient, and operations on the generative organs, the eyes, and the skull are of special psychological significance. There is much less unjustifiable operating to-day than 20 years ago, much better physical preparation, and incomparably better anaesthesia. But it is doubtful whether we yet spend enough time on psychological preparation and full discussion of the pros and cons of the operation. It is so easy to acquiesce when the patient says, "You know best, doctor," and forget that such an attitude may conceal a good deal of apprehension. Many of us must have had the experience of seeing a child, who had hitherto undergone investigation with good grace, suddenly scream and refuse to co-operate on the arrival of the pathologist, and one who has been almost morbidly submissive in the ward may behave like a maniac in the out-patient department. We realize then that the iron has cut deeper than we knew. No trouble should be thought too great in preparing little children for operation, and deception and trickery of any kind should be most earnestly avoided.

[1] *The Family*, Feb., 1943.

ERADICATION OF ANOPHELES GAMBIAE IN BRAZIL

It is characteristic of mosquitoes, as of many other forms of life, that species seldom show much tendency to spread beyond the boundaries of their natural areas of distribution. One famous transgressor in this respect has been *Aëdes aegypti*, the yellow-fever mosquito, now almost world-wide in its distribution where climatic conditions permit. Of anopheles almost the only species showing any indication of such a tendency has been *A. gambiae*, the chief carrier of malaria in tropical Africa. This has apparently established itself along the adjoining coasts of Arabia and in some of the islands near the African Continent as well as having been occasionally recorded from Mediterranean ports. Nevertheless it was with much surprise that students of the group learnt of the recording of *A. gambiae* by Shannon in 1930 from the port of Natal north of Pernambuco on the Brazilian coast, the first record of an Old World species of anopheles in the New World. Within a few years *A. gambiae* had been recorded from many other localities over a wide area in North-East Brazil, and when this was followed in 1938 by a severe epidemic of malaria due to this species the seriousness of the menace both to Brazil and to America became only too manifest. In these circumstances a scheme was immediately instituted under the direction of the International Health Division of the Rockefeller Foundation not merely for the control of this species but for its complete eradication—a scheme which, improbable as its success may have at first appeared, has actually within two years achieved its end. Under the title *Anopheles gambiae in Brazil*[1] Drs. Soper and Bruce Wilson of the Rockefeller Foundation have given a full, detailed, and very interesting and informative account of the spread and retreat of *A. gambiae* in the "invasion area" and of the operations taken against this species. During 1939 *A. gambiae* continued its march up the various branches of the Jaguaribe, Assu, and Apodi rivers and along the coast of Ceara at such a rate that it was feared the infected territory would become too extensive for available funds to cope with the situation even with adequate methods. But in 1940, when after the dry season the rains had set in, it became apparent that the measures during 1939 had already produced an effect. By November, 1940, the last Brazilian-born *gambiae* had been destroyed. The report is illustrated by a number of excellent photographs and maps, and is an outstanding addition to the literature of anopheles control.

[1] *Anopheles gambiae in Brazil, 1930 to 1940*. By Fred L. Soper and D. Bruce Wilson. New York City: The Rockefeller Foundation.

MEDICINE IN PERSIA

One pleasant instance of the close relations between this country and Persia was the inauguration of the Anglo-Iranian Medical Society in September, with more than 70 Persian, British, American, and Indian medical men attending a reception at Victory House. The idea originated with Col. S. M. A. Faruqi, I.M.S. and D.D.M.S. in Teheran, who has been untiring in his efforts to bring members of the British and Indian medical professions now serving in the armed Forces in Iran into closer relationship with Persian doctors. Dr. Habibi Adle, president of the Iran Medical Society, has given the movement his full support, as has the Minister of Health, Mr. Amanullah Ardalan. Cordial agreement having been reached on this new project, Dr. Faruqi then talked to the 70 or so doctors present on the problem of typhus in Iran, where many lives were last year lost from this disease. He feared that an even more severe epidemic would come upon them, but there were now in Iran many doctors with much experience of typhus. Dr. Faruqi suggested that a small committee should be set up at once to co-ordinate information and personnel for dealing with the typhus problem in the most effective way possible.

COLONIAL RESEARCH

Evidence of the scientific approach now being made to Colonial problems is provided by a White Paper. It is the first progress report of the Colonial Research Committee appointed in June, 1942, under the chairmanship of Lord Hailey, to co-ordinate the whole range of research in the Colonial Empire. The most important feature of the report is that it marks a first attempt to survey the whole field of Colonial research and its requirements. The committee has not yet been able to complete its survey of the major problems with which it is concerned, though substantial progress has been made. The schemes actually approved so far are therefore only the smaller projects

which can be started even in wartime. Apart from the schemes made under the Colonial Welfare and Development Act of 1940 the committee has recommended to the Secretary of State a number of other proposals, which are now under consideration by Colonial Governments. These include the investigation of alternative methods of producing cinchona for quinine; the scheme contemplates the establishment of a new Cinchona Research Institute in East Africa to experiment in methods of local production. Rinderpest and tsetse-fly research are to form the subject of a special report to the committee by the East African Governments. The Colonial Products Research Council, which is an executive body, works in close association with (and is complementary to) the committee. The council's function is to organize and sponsor research into Colonial commodities, with the primary object of finding new uses for them. At the request of the Medical Research Council it is also engaged in reviewing the field of research into vegetable drugs. Among a variety of investigations concerned with foods or drugs the production of ergosterol is being studied at the Chemical Research Laboratory of the Department of Scientific and Industrial Research by Dr. A. C. Thaysen. The council is also co-operating with Government Departments in work of which details must for the present be kept secret.

INFANT'S REACTION TO FEEDING

The diligent study of the psychology of the child goes on. D. P. Marquis,[1] working in the Yale Institute of Human Relations, has published a study on frustration reactions in the newborn. This paper, which is part of a larger general investigation of the adaptation of the infant to his post-uterine environment, seeks to describe the nature of the reaction pattern, present in the newborn, to a type of frustration common to most bottle-fed infants; the variation of the reaction pattern from infant to infant; and the factors determining individual variations if they are found to occur. The author defines "frustration," in the sense of Dolland, Doob, and others, as "that condition which exists when a goal response suffers interference."

Seven newborn full-time infants from the paediatric department of the New Haven Hospital, unselected except for the factors of bottle-feeding and normal physiological condition, were observed so far as possible for two feedings each day over the 10-day period after birth. The infants were brought to an experimental room for feeding and were placed in a bassinet equipped for automatic registration of general bodily activity. The standard feed of the clinic was used and given in four equal parts. Observations were begun after a 5-minute interval, and made over periods of 90 seconds each, beginning before the feed, between the feeds, and after the total amount had been given. A break for expulsion of air from the child was made after the second portion of the feed, and a 90-second period preceded and followed this—thus six such periods in all. The onset and duration of bodily activity, mouth activity (sucking, etc.), and onset of crying were noted. A time-marker was used. The latency and duration of each of these phenomena at different stages of the feeding were recorded. It was found that newborn infants show marked frustration reactions in the feeding situation, varying with the strength of the hunger drive. Decreasing degrees of the hunger drive were accompanied by decreasing amounts of general and mouth activity and by correspondingly increased latencies after the bottle was withdrawn at the various stages of feeding. The pattern of the frustration reaction appeared to have fairly well defined characteristics. The frustration became greater as the feeding pattern became more specific. Individual differences in the reaction were noted.

Five of the infants were observed after 3 months, and several differences were recorded. The author suggests that from the methodological point of view her technique is a more effective way of studying emotions in the newborn than the traditional methods of Watson and Morgan, that the feeding situation is a more common or less artificial one than the sudden loud noises, etc., which these workers have employed. She believes that her results lend support to Kleitman's theory of the development of the "wakefulness of choice" as opposed to the "wakefulness of necessity," which develops as the cerebral cortex develops greater functional activity. In the neonatal period the subjects described here tended to become more and more quiescent as hunger was satisfied, whereas at three months the level of general activity remained fairly constant throughout the feeding situation, and could no longer be employed as a differential criterion of frustration. Miss Marquis interprets this as an indication that, by reason of increasing cortical differentiation, the response of general bodily activity has become attached to a growing number of stimuli. Changes in the distribution of mouth activity in the situation were observed. Mouth activity begins in most cases only after feeding has taken place, and occurs with lessening frequency as feeding progresses. The author would explain this in terms of, first, the perseveration of a neuromuscular set initiated by the act of feeding, and, secondly, by the concept of the hunger drive, which, as it diminishes, no longer produces internal stimuli and resultant strong oral or other responses. The author subjects her observations to statistical analysis, but omits to give any idea of standard error, which necessarily limits their value. The total study of which this paper is a part promises to yield useful information on infant behaviour, even if it only seems to put a controlled scientific imprimatur on observations which every mother has made.

[1] *J. exp. Psychol.*, 1943, **32**, 123.

INADEQUATE HOSPITAL DIETS

The Duke of Gloucester, speaking from the chair of the General Council of King Edward's Hospital Fund for London, announced on Dec. 14 that grants totalling £280,000 are again being distributed among the voluntary hospitals. Referring to the report on hospital diet issued by the Fund and discussed in the *Journal* of Sept. 18 (p. 365), His Royal Highness said that this report had caused concern in hospital circles, both voluntary and local authority, throughout the country. It was important that hospitals should be prompt to apply the new knowledge of the science of nutrition for the benefit of the sick within their walls, whose recovery it was now realized might be directly affected by the food they ate and by the way it was cooked and served. There was a great work for the hospitals to do in this field, and a commensurate increase in expenditure was amply justified. Already several hospitals had sought the advice of the King's Fund, and there was evidence that many were re-examining their standards of feeding. He had therefore as President appointed a committee with Prof. J. C. Drummond, scientific adviser to the Ministry of Food, as its chairman, and Sir Wilson Jameson, Chief Medical Officer to the Ministry of Health, had also accepted an invitation to join the committee. Miss Margaret Broatch, who has had wide experience as a hospital dietitian, will be dietetic adviser and take up her duties in January. It is most satisfactory that the King's Fund has not rested on its oars: the matter is one that calls for early action and constant reminder.

CARE OF CHRONIC SICK

A CASE FOR TREATING CHRONIC SICK IN BLOCKS IN A GENERAL HOSPITAL*

BY

MARJORY W. WARREN, M.R.C.S., L.R.C.P.

Deputy Medical Superintendent, West Middlesex County Hospital, Isleworth

This contribution to the problem of the chronic sick is an effort to make a case for their treatment in a special block in a general hospital. My reasons for advocating such an arrangement are fourfold: (1) that geriatrics is an important subject for the teaching of medical students and should form part of their curriculum; (2) that the care of the chronic sick should comprise an essential part of the training of student nurses; (3) that for the proper care of the chronic sick the full facilities of a general hospital are necessary, both for the establishment of a correct diagnosis and for treatment; (4) to encourage research work on the diseases of old age which can only be undertaken with the full facilities of a general hospital. These statements will be amplified in support of my arguments.

Although the term "chronic sick" includes patients of all ages, I understand that this discussion applies principally to the problem of the elderly sick, and I therefore intend to eliminate the younger age group. Before passing on to the main subject, however, I will make one or two cursory remarks on the care of these younger patients. First, I think that they should be nursed and treated with ample accommodation in small units, and *separate* from elderly patients. Secondly, there should be adequate opportunities for medical research into the chronic conditions affecting the young and those in the prime of life. Lastly, no pains should be spared in affording these patients all the possible amenities by which their cramped and restricted lives may be made pleasanter, seeing that many of them live for several years. I have in mind particularly mobile libraries and visiting librarians, forms of occupational therapy, and concerts for those fit to attend.

To return to the main subject—the elderly and aged chronic sick—first, it must be appreciated that the number of men and women over 60 years of age has increased and is still increasing, as shown by the Ministry of Health census figures:

Population Aged 60 and over in England and Wales

1901 Census figures:
Males, 1,071,519
Females, 1,336,907 } 2,408,426

1939, July estimate; unquoted, unpublished:
Males, 2,511,200
Females, 3,197,400 } 5,708,600

This statistical fact means not only an increase in the absolute numbers of elderly people living but also a relative increase in the proportion of elderly to middle-aged and young people. At the present time, in my own experience—and this I have confirmed so far as is possible from other sources—women outnumber men in all institutions and hospitals where the chronic sick are catered for. Two factors, I think, contribute to this state of affairs: that the average duration of life in a woman is longer than in a man; and that it more frequently happens that a man can be cared for at home by his womenfolk than vice versa. The increase in the number of elderly people has resulted from the steady practice of preventive and industrial medicine during the present century, and is therefore a problem which has been brought about in part, at least, by the medical profession and which can no longer be ignored by them.

Specialization in Geriatrics

Although I do not claim to be a specialist in geriatrics I have for several years been much interested in the problem, and in my opinion until the subject is recognized as a special branch of medicine in this country it will not receive the sympathy and attention it deserves. Only in comparatively recent times has paediatrics really been fully appreciated as a specialty—and certainly in my student days children were too often nursed in adult wards (there being no special wards set apart for them), and too often junior medical and nursing staff were considered all that was necessary for their care. To-day much the same attitude is shown towards the care of the chronic sick—a class which includes the majority of elderly folk—and very frequently they receive but scant attention. The proper care of the aged chronic sick requires knowledge of the elderly and sympathy with their particular requirements—and most classes of these patients should be treated in blocks as part of a general hospital. It is quite as unsuitable to treat these patients in wards for acute cases as it is to relegate them, often unsegregated, to institutions for the chronic, where facilities for diagnosis, research, and treatment are unobtainable. In the former case these worthy people, whose lives have been every whit as useful as we should like to believe our own, are ill-housed with younger folk who are irritated by them and in turn annoy them, and usually the staff has neither time nor facility for treatment. In the latter case there is usually a lack of attention and of facilities should an acute condition supervene—and, moreover, the "chronic" institution tends to attract a less good medical and nursing staff. With these points in mind, and appreciating that the problem shows no signs of diminishing in the years to come, I cannot too strongly advocate the inclusion of geriatrics in the medical student's curriculum. A comparison of the numbers of chronic sick treated in the voluntary hospitals, where hitherto most of the teaching of medical students has taken place, with the numbers treated in the municipal hospitals and other institutions bears ample testimony to the attitude of the profession as a whole to this subject.

Classification of the Chronic Sick

In 1935, by the appropriation of the Poor Law institution, the West Middlesex County Hospital inherited overnight several hundreds of chronic sick patients, unclassified and ill-assorted. Early in 1936, still overwhelmed by the problem of the proper care and treatment of these patients, I interested myself in a scheme of classification, and am much indebted to my chief, Dr. Cook, for allowing me to carry out this experiment, which has been working more or less satisfactorily ever since. The classification adopted was as follows:

1. Chronic up-patients—that is, patients who get up part or whole days and can get about with some help, but who cannot manage stairs.
2. Chronic continent bed-ridden patients.
3. Chronic incontinent patients—such wards are allocated only on the female side.
4. Senile, quietly restless and mentally confused or childish patients requiring cot beds for their own safety, but not noisy or annoying to others.
5. Senile dements—requiring segregation from other patients.

I am certain that wards for such patients should be small and that day-rooms, verandahs, and occupational therapeutic facilities should be amply provided. Elderly people are essentially individualists, and provision should be made for grouping together those congenial to each other—e.g., I have more than once had patients over 70 years of age complain of being warded with "old people," and invariably such patients have been considerably more alert, although no younger, than others present, and as such should be nursed with those of equal mental capacity. With such classification the special requirements for each group can be ascertained, and in addition to the comfort of patients there is the convenience to staff, regard to exercise, and experience in nursing care. These requirements include:

Diet.—Where large numbers of edentulous patients are nursed meat should always be minced and vegetables puréed.

Linen.—Additional stocks should be provided for incontinent wards.

Staff.—Nursing staff and attendants should be arranged for, to give additional help to patients in dressing and in getting up and about the ward.

Equipment.—This should include tables for games, additional easy-chairs, wheel-chairs, crutches, and sticks with rubber ferrules.

Blocks thus equipped should be—and I think this very important—easy of access to all special departments, including *x*-ray department, pathological laboratory (plus post-mortem room), gymnasium, ophthalmic surgeon, dental surgeon, chiropodist.

* Read to the London and Home Counties Branch of the Medical Superintendents' Society.

Advantages of the Block System

With these facilities such blocks should provide excellent experience for teaching both medical students and student nurses, and I claim that these blocks should not be relegated to the sole charge of the newly qualified or very junior medical staff, nor be used by the matron as punishment wards for nurses. Certainly all students should be taught to recognize geriatrics as an essential and interesting part of their work.

The more time spent in such wards with full hospital facilities the greater the number of patients that can be correctly diagnosed, treated, and discharged home to the care of relatives and friends. Often education to a slower tenure of life during senescence and readjustment to a slightly more dependent existence are what is needed, and relatives are most grateful for such treatment of their elderly folk and for advice given as to their future care at home. The number of patients able to leave such wards varies, I think, immensely with the time available and the work done. Many of the so-called "incurable" cases only need the patience, tact, and quiet energy of a staff trained to work with this type of patient to show a considerable measure of improvement. Without easy access to special departments, however, there is a strong disinclination to undertake the necessary investigations in these cases, and in the absence of a correct and complete diagnosis treatment must perforce be less efficient.

It is unlikely that facilities on the scale that I advocate would be available at a hospital for chronic sick only. Nor is it likely at the present time that sufficient medical and nursing staff of the right type would be attracted to such hospitals.

Conclusion

The urgent need for research work on senile diseases cannot be overstressed, and should be organized in connexion with wards such as I have described. With the experience obtained during the last seven years, and for the reasons stated, I do very strongly advocate treating the chronic sick in blocks allocated, equipped, and suitably staffed for the purpose in a general hospital.

It is noteworthy that geriatrics has received more attention in America than in this country, and much of the literature on the subject has emanated from American writers, notably Thewlis.

TWENTY-ONE YEARS OF THE B.P.A.

The late Dr. J. F. Gordon Dill and his friends who founded the British Provident Association, which has just completed its twenty-first year, probably had no thought in mind save to help people of moderate means, whose resources were straitened after the last war, when faced with the financial burden of a serious illness. At that time there appeared no real threat to the principle of unrestricted choice of doctor and institution, and although voluntary hospitals were in jeopardy as a result of falling income and rising demands, a State Medical Service was a subject only for academic discussion. The Hospital Saving Association, proceeding by different methods and providing for a different class of the community, came into existence at almost the same time and as a result of the same solicitude. In the narrowest sense both these movements were forms of insurance; to become a subscriber or contributor was as much a matter of business as taking out an endowment policy, yet the H.S.A. has created a great co-operative movement for the fortification of the voluntary hospital, and the B.P.A. has greatly strengthened the regard for what may be called unregimented medicine. Both these movements have to be reckoned with in the future shaping of hospital and health policy.

The British Provident Association had its forerunner in a local effort in 1920, known as the Sussex Provident Scheme for Hospital and Additional Medical Services, in which a number of Sussex hospitals co-operated. In the light of that successful experiment Dr. Dill, together with Lord Dawson of Penn, the late Sir Napier Burnett, Mr. W. McAdam Eccles, Sir Arthur Stanley, Sir Alan Anderson, and others, conceived a provident scheme on national lines, to be applied first to the Metropolitan area. After discussions with hospitals, friendly societies, and the medical profession, a scheme was launched, with three large London hospitals co-operating. It provided benefits for its subscribers—people with incomes in excess of those who came under the contributory scheme of the Hospital Saving Association—and began by making grants towards the cost of hospital maintenance and of consultations, expenses of home nursing, and the like. In 1925 it instituted a new form of benefit—assistance towards the fees of operating surgeons—and this was later extended to include the fees of consulting physicians. Additional privileges have been accorded from time to time, including the provision of family doctor benefit. Surpluses have been used for providing additional benefits for subscribers who have been registered for three years or longer. These benefits include payments towards the cost of manipulative orthopaedic operations and various special diagnostic and therapeutic services.

In the course of its history the association has distributed benefits amounting to some £134,000, one-tenth of this sum during the last year. But there is much more behind these figures than the reward of thrift or foresight for certain people. A great deterrent to recovery after a serious operation is the thought of the financial adjustments looming ahead, and the reflection that the surgeon's fee will be met in whole or in great part by the association's contribution, and that a large percentage of the hospital or nursing-home charges will be similarly met, contributes greatly to recovery. We cannot here recapitulate the various benefits and the conditions under which they are made; they occupy an entire booklet, which can be obtained from the office of the Association at 30, Lancaster Gate, W.2.

A BIOLOGICAL CRITICISM OF EDUCATION

In a recent address to the Leeds Medical School Sir JOHN GRAHAM KERR, F.R.S., M.P. for the Scottish Combined Universities, made some criticisms as a biologist of the Governmental scheme of education. He recalled his own early experience of living for a time among a primitive race of the Gran Chaco in South America and observing the system of education practised among them. In their communal evolution these people had not reached even the stage of cultivating plants or of keeping flocks and herds, but the system of education among them, to sum it up in modern phraseology, consisted simply of training in good citizenship—training to be an efficient, and therefore a happy, member of the community. It relied upon training in observation of natural phenomena, the interpretation of such observation, and the development of the habit of constant mental alertness.

The fact that education to-day in civilized communities had departed so widely from this original type was due, paradoxically, to one of the most beneficent events in the whole history of civilization—the invention of the printed book. It was the printed book which brought with it the possibility of mass education. In the age of manuscript education was centred in the religious houses, and spread beyond them only into the circles of the well-to-do. With printing it could be extended to the common people, but the teaching so given was the teaching of authority—namely, pronouncements on subjects of an abstract kind, such as theology, philosophy, mathematics, and history—and an inevitable result of the domination of the printed book was the reduction to a position of relative unimportance of training in observation, judgment, and mental alertness, which had formed so important a part of education in the earlier phases of communal evolution. While he would not speak disrespectfully of superficial culture, he was reminded of a remark about an old Clyde steamer, that she was "held together by the paint." Did we not rely in these days too much upon the paint of culture to hold civilization together?

He believed that there was an urgent call for a far more thorough overhaul of the system of elementary education than was contemplated by those whose interest was centred in improving its administrative machinery. Imprisoned in the schoolroom, the young boy occupied himself no longer with observing and puzzling out the meaning of what he observed, but rather with an uncritical absorption of snippets of information. The memorizing of masses of detail of a multiplicity of subjects, such as geography, history, and the vocabularies of foreign languages, was relatively trivial as a means of general

mental training. He pleaded for an increased proportion of school time to be devoted to science, or, better still, to instruction in scientific method. He deplored the unfortunate effect of the dominance of the printed book in encouraging the idea that the height of a man's education was to be expressed by his degree of literary culture.

The all-important function of education, as Sir John Graham Kerr saw it, was to produce effective, and therefore happy, citizens. Success in this depended upon the successful treatment of the individual's heritage of "biological wealth"—every child born into the world was in the biological sense a little capitalist—by adding to its amount and coining it into a currency with a high exchange value in the particular circumstances in which the individual lived. In his view the primary phase of education should be devoted to the general task of laying the foundations of good citizenship. Health and strength—physical, mental, and moral—powers of observation and the interpretation of what was observed, alertness of mind and body, command of the English language and its correct and clear expression, cleanliness and godliness, personal manners, capacity for team work with its attendant discipline—these were the components of the elementary or primary phase of education, and they provided the foundation upon which must rest the later stages of education in school and workshop, in university and vocational career. Here he emphasized again that technical subjects, which had their place in the workshop, studio, laboratory, or field, must by no means be placed on a lower level than those associated with the study and library.

"THE WEEK'S GOOD CAUSE"

The coming-of-age of the B.B.C. makes it appropriate to mention the work done by that organization as a director of public benevolence. When, on Sunday nights at 8.40, while listeners are still digesting the religious service, and not yet uplifted or depressed by the 9 o'clock news, a persuasive voice comes on the wireless and pleads the cause of some charity, a hospital or social welfare organization, the ordinary man hardly realizes how widespread are the springs of generosity which are being tapped. No doubt, if there were no appeal, a proportion of the money would still find an altruistic outlet, but without the Central Appeals Advisory Committee of the B.B.C. it would be less fairly and intelligently allocated. The largest sum netted by a single appeal, in either peacetime or wartime, was £100,000 given to the King George Fund for Sailors as a result of Lord Baldwin's five minutes' advocacy in December, 1939. Since then there has been largely increased taxation and many more demands upon personal resources, yet during the first ten months of 1943 well over £200,000 was raised for various charities. Of the appeals made since the beginning of the war twenty-six have each brought in over £10,000.

The volume of response varies with the inherently appealing nature of the work pleaded for, and to some extent with the voice of the pleader, but not too much must be made of the latter. We might have a poor opinion of the persuasiveness of the new Minister of Health, Mr. Willink, when we learn that only £200 came in in response to one appeal of his, but we find immediately that in response to two other appeals of his for another cause £10,000 and £15,000 were received. It is not easy to say why the campaign against tuberculosis should fail to stir the generosity of the public while the campaign against cancer almost invariably evokes a large response. Two broadcasts in aid of the National Association for the Prevention of Tuberculosis each brought in only about £400, whereas Lord Horder's appeal for the British Empire Cancer Campaign brought in £10,000. Another point is that, while prevention is better than cure, it has less force in a charitable appeal. The word "hospital" seems to go straight to the heart of the listening public. During the last few months, to take a few examples, an appeal for the Christie Cancer Hospital, Manchester, and the Liverpool Radium Institute brought in £6,413, for St. Luke's Hospital for Advanced Cases £3,500, and for Queen Charlotte's, the London Chest Hospital, and the Swansea General and Eye Hospital, over £2,000 each. The largest response to a hospital appeal was to that made by Mr. Donald McCullough in February, 1942, which gathered over £10,000. The number of separate donations was 6,300, and of these only 750 came from the region of the hospital (Devon and Cornwall).

At the beginning of the war appeals for individual hospitals were discontinued and group appeals for voluntary hospitals were made. The first of these yielded £19,443, but the second and third brought in comparatively small amounts, and it became evident that the term "voluntary hospital" must have a local habitation and a name if it is to inspire benevolence. In the early part of 1942 it was decided that nine appeals for individual hospitals should be made in the course of the year, and the experiment proved a success and has been continued. Specialized hospitals or those which have been seriously damaged by enemy action and are not in receipt of large E.M.S. grants receive first consideration.

Three wartime broadcasts for the Invalid Children's Aid Association brought in altogether nearly £7,000. The Ex-Services Welfare Society, as a result of three appeals by an unknown soldier of the last war, received about £12,000. British Medical Missions in Africa, following an appeal by Mr. Justice Birkett, received £7,362. The work of the district nurse, which one might have expected to open many purses, had able advocates, but the broadcasts brought in only modest sums to the Queen's Institute. On the other hand, the Cripples' Training College at Leatherhead and the sister college at Exeter gained over £2,000 from one appeal. The fact that all these sums are in small donations, and are given in addition to the steady support of the institutions by their own constituencies, suggests again the deep root which voluntary institutions have in the pride and affection of the British public.

FUTURE MATERNITY AND CHILD WELFARE SERVICES

Last February a conference of representatives of societies concerned with maternity and child welfare set up a committee to consider how the maternity and child welfare services could best be maintained and developed "in view of the changes in medical services which may be consequent upon the Beveridge report." That committee, whose chairman was Dr. P. V. Pritchard, in its report comments on the suggestion that one doctor should be responsible for the preventive and curative medical services for all children in his care, irrespective of age. While certain advantages would derive from this, the report continues, general practitioners as at present trained are not always fitted to carry out this dual role—a fact which should be borne in mind by those concerned with the planning of medical education. The committee's first general conclusion is that maternity and child welfare services should be administered by the local authority responsible for the personal health services of an area. It does not concur in the view that the education and not the health authority should be responsible for the care of the child from 2 to 5. The health and management of the child, at least to the age of 5 and preferably to the end of school life, should be supervised at clinics equipped for the purpose and by health visitors. In the committee's view the preventive medical services should be under the control of one "Ministry centrally and one committee of one authority locally, with the medical officer of health as the responsible chief officer." The local authority should continue to provide: (1) a midwifery service, including maternity beds for both normal and abnormal cases, adequate transport, and residential nurseries for the older children; (2) ante- and post-natal clinics. A consultant service with specialist staff and an emergency obstetric and transfusion service connected with a hospital should also be available. The medical officer of a clinic must be experienced in the general principles of the work and in obstetrics, and, if not a recognized consultant, should have held a resident obstetric appointment. He must also be qualified to advise and guide mothers on all that concerns their own and their child's health. Each authority should have a consultant paediatric service. The important part played by health visitors is emphasized in the report, and a plea is made for increased numbers and for extended training. Finally health education should not be confined to the expectant and young mother, but should be a feature of our educational system, so that the next generation may be brought to adult life and especially to marriage and parenthood with constructive health habits.

The *x*-ray picture of the lungs in beryllium poisoning, according to Meyer (*Beitr. klin. Tuberk.*, 1942, **98**, 388) shows in the middle field in some cases streaky, sharply demarcated shadows, and in the more severe cases a more intensive homogeneous shadow. Fifty per cent. of workers handling beryllium have slight affections of the respiratory organs, and in a smaller proportion of cases there was severe lung disease with a high mortality.

Nova et Vetera

THE DIGNITY OF THE MEDICAL PROFESSION

To most men past middle age the name of Conyers Middleton is known because of a few sentences in one of Macaulay's *Essays*; possibly some readers of Lecky or Leslie Stephen have been tempted to read Middleton's *Free Enquiry into the Miraculous Powers of the Christian Church*, an early example of "debunking." In an annotation in his copy of one of Middleton's rejoinders to critics Macaulay commented unfavourably on Middleton's querulousness. Most readers would agree with Macaulay. When a doctor of divinity claims to have proved that highly esteemed Christian Fathers were shameless liars he *ought* not to be surprised if some of his colleagues are rude to him.

A Bygone Squabble

This peevishness is amusingly illustrated in another of Middleton's quarrels, now quite forgotten. In 1724 Richard Mead devoted his Harveian Oration to a eulogy of the medical profession, at least of *physicians*, and spoke disdainfully of the opinion that in Rome physicians were always slaves or foreigners. It was a short oration, in a pleasantly pre- or post-prandial style, and it might seem a little odd that a Cambridge D.D. should publish a pamphlet of 35 pages dotting the i's and crossing the t's of a thesis that Roman gentlemen of the republican age did *not* think highly of doctors, that most doctors were foreigners and many of them slaves. However, that is what Middleton did. As Allbutt in our time, with far more erudition than Middleton, has painted a picture not essentially different from Middleton's, it is not necessary to summarize the latter's arguments.

The pamphlet was courteously written, but it evidently annoyed not only Mead but some of his colleagues, and several rejoinders were printed. Middleton again took the field. His second pamphlet was much longer than his first (52 pages), and is aimed against three of the rejoinders. Middleton does not cite the titles in full and I have no access to the works themselves, but their authorship can be identified with reasonable confidence. No. 1, *Notae Quaedam Breves*, etc., was the work of Joseph Letherland (1699–1764), an M.D. of Leyden and, later, of Cambridge, admitted a Fellow of the Royal College of Physicians in 1737, and at the time of his death physician to Queen Charlotte. According to Munk he was a man "of deep and very extensive learning." At the time of the controversy he was 25 or 26. No. 2, *Responsio*, according to Middleton a substantial volume, was written by John Ward (1679–1758), an LL.D. of Edinburgh and professor of rhetoric in Gresham College; he was not a medical man. No. 3, *Animadversio Brevis*, was, according to Middleton, by the author of No. 1; I cannot identify it.

In the second pamphlet Middleton's courtesy had worn so thin as to be imperceptible, and he makes some preliminary remarks which remind one of Macaulay's annotation. Middleton had said in his first pamphlet that it arose out of a friendly discussion in his rooms at Cambridge. Now he tells us that he had found some doctors a little too high and haughty about their profession (*vel gloriola quadam elatos, vel artis suae caritate nimis fastidiosa incensos*), and thought they should be taken down a peg or two by a perfectly courteous account of the facts. Whether Middleton was really naive enough to believe that our predecessors would thank him for this service is matter for speculation. Anyhow, this time he is not quite so careful to avoid the use of contumelious or harsh words. According to him, although the author of No. 1 described himself as a doctor of medicine (apparently all three rejoinders were published anonymously), judging from the writer's style he was more probably a quack who harangued crowds in market-places and was wholly devoid of either intelligence or modesty, unless the fact that he *did* conceal his name was evidence that he was conscious of his rashness and ignorance. The author of No. 2 was a mere rhetorician who wrote bad Latin and was even more stupid than the author of No. 1—in fact a cowardly hireling ready to assail anybody for money. Middleton's belief (probably correct) that the author of No. 2 was remunerated by Mead no doubt spurred him on to special oratorical efforts. Latin, like German, is very rich in resounding terms of abuse, and it must at least be set to Middleton's credit that he did not accuse any of his opponents of murder or unnatural vice.

Of the intrinsic merits of the performance there is not much to be said. Perhaps, in these days when compulsory Latin is a memory, we overrate the learning of the early eighteenth century. One small example may be given. Tully in a famous passage (*De Officiis*, Bk. I, cap. 42) included medicine among professions honourable "iis quorum ordini conveniunt," usually translated: "to those to whose rank, or condition, in life they are fitting." The author of No. 1 accused Middleton of ignorance of Latin because he did not know that *ordo* implied a free-born status and could not be used of a slave or freedman, whose status was a *conditio*. This charge excited Middleton to a fury which flows over two pages; but instead of quoting, with deadly appositeness, the first words of Suetonius's *De Grammaticis*, xviii: "*L. Crassicus, genere Tarentinus, ordinis libertini*," Middleton quotes a line from a comedy! The oldest profession in the world is a familiar gibe, but not exactly authority for the serious use of the term "profession." Clifford Allbutt would *not* have failed to score the point.

Perhaps Fellows of the Royal College of Physicians and Doctors of Divinity two hundred years ago were not much more learned but only more childish than they are now.

M. G.

PLASTER SPLINTS IN THE AMERICAN CIVIL WAR

The United States Sanitary Commissioner, being apprised of the lack of essential medical literature for Army surgeons serving in the field, sought to mend the situation by distributing brief essays, similar to our modern memoranda, on the practice of wartime medicine and surgery. One essay,[1] "T" of an alphabetical series, opens with a short historical summary and continues with the criticism that the early surgeons used plaster-of-Paris in a clumsy manner so that a hammer and chisel were required to remove it. The encasing moulds were likened to heavy stone coffins serving well enough the purposes of interment, but wholly unsuited to the function of a splint. The improved method was based on that of Maisonneuve, who had recently revived the use of plaster splinting for fractures. Little applied the treatment in the New York Hospital in 1861, and it was so successful in fractures that the starch bandage and other methods of dressing were supplanted. It is pointed out that in military surgery the advantages of plaster are that it adapts itself to the parts and dries quickly, thus permitting the patient to be transported to more comfortable quarters. Moreover, if applied so as to leave a portion of the limb uncovered there is no danger from swelling. Windows may be cut in the splint so that wounds could be dressed and cooling lotions applied.

The procedure adopted was as follows. First, shave or oil the skin. Then make a paper pattern of the area to be covered and cut to it two thicknesses of Canton flannel or old muslin, devising windows if wounds are present; the sides of the flannel should remain about one inch apart when in position. Sprinkle plaster into an equal quantity of water to a creamy consistence. Immerse cloth till thoroughly saturated, lay it on a flat surface and smooth with the hand. Apply flannel to limb and put snugly over it a roller bandage. The limb is then held for a few minutes, extension being made if necessary until the plaster sets, when the roller bandage is removed. If it is necessary to delay the "setting" of the plaster this may be achieved by adding a small quantity of carpenters' glue.

The dressing was recommended as a valuable aid in the transport of patients, and it could be maintained with advantage during the whole course of treatment in cases of simple or compound fracture of the joints and of the limbs except the femur. In the last the dressing was applied from the pelvis to the heel for steadying the limb during the journey to hospital, where Dr. Gurdon Buck's treatment should be applied. In wounds of the knee-joint it is interesting to note that "perfect quietude" was regarded as one of the most important points in the treatment.

An illustration is given of a much swollen elbow-joint of a patient wounded at the Battle of Cross-Keys. The joint had been entered by a round bullet, which was removed two weeks later, when free incisions around the joint were found to be necessary. At this stage a plaster splint was applied to the anterior surface of the arm and retained by a transverse band above the wrist and another at the middle of the humerus, the arm being flexed. This splint was worn for a month and then renewed. The head of the radius came away and the patient recovered with some degree of motion in the joint.

Dr. Swan employed the plaster splints in several cases of fracture after the seven days' fighting before Richmond, during M'Clellan's campaign, and the patients were comfortably transported to Washington. Confirmation of its value came also from another seat of war—far-away Schleswig, where Louis Stromeyer Little reported[2] that "Plaster of Paris is universally employed in compound fractures. In ten of the femur particularly it answered very well, the patient could bear to have the limb moved about and all seemed in a fair way to recover."

[A complete series of these essays, A–T, published 1862–4, is to be seen in the Library of the Royal College of Surgeons of England.]

S. W.

[1] Little, James L., *On the Use of Plaster of Paris Splints in Military Surgery*, pp. 13, 1864.

[2] *Lancet*, 1864, **1**, 284.

Reports of Societies

BLOOD CHANGES IN INFECTIOUS DISEASES

At a meeting of the Fever Group of the Society of Medical Officers of Health on Nov. 19, with Dr. ANDREW TOPPING in the chair, a discussion on haematology in the infectious diseases was opened by Dr. G. W. GOODHART. In general, he said, the prodromal stage of most fevers was characterized by a polymorphonuclear leucocytosis; this persisted into the eruptive stage in coccal diseases, but in bacillary and viral infections there was a tendency to leucopenia or lymphocytosis. In scarlet fever a polymorphonuclear leucocytosis continued usually until the end of the second week of disease, and its absence in severe toxic cases was a bad prognostic sign. Eosinophilia, sometimes up to 10%, was characteristic.

Prominent in the group of diseases marked by leucopenia with a relative lymphocytosis was enteric fever. These changes were early, but their importance in diagnosis was diminished by modern bacteriological methods. Nevertheless, leucopenia was a help in diagnosis, particularly in clinically atypical cases, whereas a blood count could sometimes negative a diagnosis of typhoid which seemed clinically probable but lacked bacteriological proof. Not enough attention was paid to the characteristic absence of eosinophils in the leucopenia of typhoid. Leucopenia was not so constant in paratyphoid, and he had seen several mild cases with a persistent polymorphonuclear leucocytosis. The blood picture in measles and rubella was approximately the same: with the appearance of the rash there was leucopenia with a relative lymphocytosis which often became an absolute lymphocytosis and a rising lymphocyte count.

In rubella an additional aid to diagnosis was the appearance of plasma or Türk cells in exceptional numbers. The precise nature of these cells was uncertain, but their presence in rubella, although not constant, must be accepted as a diagnostic factor. Such a picture would be more helpful in differentiating rubella from scarlet fever rather than from measles, since Türk cells were sometimes present in increased numbers in the latter disease. Leucopenia with relative lymphocytosis occurred in mumps, and helped to differentiate it from septic adenitis, in which there was a polymorphonuclear response, and from glandular fever, although the rarer forms of this disease did show a leucopenia, distinguishable, however, from mumps by the presence of atypical monocytes in stained films. Whooping-cough differed from other infectious diseases in its absolute lymphocytosis. This was found in the catarrhal stage before the whoop developed, and might be helpful in deciding to isolate contacts early. Lymphocytosis reached its peak in the paroxysmal stage of the disease. Care was necessary in interpreting counts, particularly in the lower ranges, since the lymphatic apparatus in childhood could be readily stimulated by varying pathological processes. He would put no great stress on figures below 20,000 per c.mm., except perhaps in adults and older children, when he would require a high lymphocyte percentage unless the clinical evidence was strong. But with exceptionally high total counts comparatively low lymphocyte percentages could be accepted, for this might occur in complications. For example, in one case of whooping-cough pneumonia there were 165,000 leucocytes per c.mm., of which 46.5% were polymorphonuclears and only 42% were lymphocytes.

Summarizing, Dr. Goodhart felt it was unwise to talk glibly of characteristic counts in various fevers, since many cases ran a complete course without alteration from the normal blood picture other than could be paralleled in healthy people.

In the discussion which followed this paper, Dr. IAN TAYLOR stressed the difficulty of interpreting minor changes in the blood count in children in the absence of exact standards of normality for the various age groups. Dr. R. F. L. HEWLETT had noted that in enteric fever with a respiratory onset there was sometimes a polymorphonuclear leucocytosis rather than a leucopenia. Dr. R. CRUICKSHANK wondered whether the eosinophilia of scarlet fever could be correlated with the allergic concept of scarlatinal nephritis. He had found a leucopenia with monocytosis in a number of typhus cases and thought this blood picture might prove useful in early diagnosis. Dr. A. B. ROSHER had found neutropenia in 25 children of an average age of 9 years suffering from acute "catarrhal" jaundice.

Blood in Sulphonamide Therapy

Dr. B. BARLING said that cyanosis was commoner with sulphanilamide than the later preparations. It could be cured in 15 to 30 minutes by intravenous administration of 10 c.cm. of a 1% solution of methylene blue, or in 3 to 4 hours by giving methylene blue by mouth. Thionin could be used in the same way. A minor degree of anaemia was common during sulphonamide therapy. Acute haemolytic anaemia was a rare but dangerous complication. In one child the haemoglobin fell from 90 to 30% in less than 36 hours, and red cells might be reduced to 2 millions or fewer in an equal space of time. Treatment in correct sequence was to stop the drug, encourage free excretion by liberal fluids with alkalis, and, once it was known that the kidneys were working well, to give blood transfusions of the correct group and Rh, remembering that one pint of blood raised the haemoglobin by about 9% in an adult male and over twice that amount in children. Aplastic anaemia was another rare complication of sulphonamide therapy: a rapidly progressive anaemia with purpura and exhaustion was accompanied by reduction in red cells, white cells, and platelets in the circulation and bone marrow. Rapid elimination of the drug, repeated transfusions, and pentnucleotide offered the best prospect of recovery. Thrombocytopenia had been recorded in America in only 12 cases during sulphonamide therapy. Serious reduction in platelets could be caused by other drugs. Short of these catastrophic and rare cases of thrombocytopenia, some reduction in platelets did occur during sulphonamide treatment. A slight leucopenia might follow the use of sulphonamides, but agranulocytosis rarely appeared until comparatively large doses of the drug had been taken over a long time. It was perhaps the commonest of the unusual blood changes during sulphonamide therapy, and about 50% of the patients died.

As vitamin K was synthesized by the intestinal flora, which, in turn, was disturbed or inhibited by sulphaguanidine, some prolongation of clotting time might be expected during the use of the drug. This had been observed experimentally in animals and was accompanied by a reduction in rate of growth. Both effects could be negatived by giving *p*-aminobenzoic acid or liver extract, while vitamin K corrected the hypoprothrombinaemia. In view of this it was suggested that vitamin K or liver extract should be given during sulphaguanidine and perhaps "sulphasuxidine" therapy to lessen the risk of hypoprothrombinaemia in the patient. Dr. WILLIAM GUNN said that nicotinic acid as well as pentnucleotide was of doubtful benefit in agranulocytosis. He felt that repeated blood transfusion was the most hopeful line of treatment. Dr. W. H. KELLEHER described the case of a child of 1 year who had been given a total of 70 g. of sulphaguanidine (15 g. daily) without any toxic effects. Dr. E. N. ALLOTT felt that "sulphasuxidine" might be more readily absorbed than was thought, as could be demonstrated by blood sulphathiazole levels of 5 to 6 mg. per 100 c.cm. Similarly, in some cases over 50% of sulphaguanidine had been found excreted in the urine.

CLINICAL PATHOLOGY

The first general meeting of the European Association of Clinical Pathologists was held in London at the Royal Society of Medicine on Nov. 26 and 27, with the president, Dr. S. C. DYKE, in the chair. At the business meeting, the association formally adopted a constitution and made plans for future action, in particular towards the establishment of local branches on the Continent of Europe, and for the development of a scheme for the interchange of workers in clinical pathology between laboratories in the countries of Europe after the war.

At the scientific meeting Dr. H. BAB (Berlin) discussed the clinical symptoms of adrenocortical hypo- and hyper-trophy. He showed numerous photographs demonstrating the effects, resulting in dwarfism, gigantism, and intersexuality, of disturbances of the action of the adrenal cortex and also of the effects of treatment by means of preparations embodying its active principles. Dr. M. MANDELBAUM (Munich) described a micro-organism of the Neisseria

group isolated from mice, peculiarly sensitive to the action of sulphonamides; within two hours after being brought into contact with very high dilutions of any of the drugs of this group the micro-organism showed characteristic morphological changes. He suggested the use of this micro-organism as a means of testing the therapeutic value of new preparations of the sulphonamide group.

Prof. S. JELLINEK (Vienna) discussed the peculiarities of electrical lesions, which, he maintained, were incorrectly described as "burns." He showed numerous gross and microphotographs demonstrating that the reaction of the tissues to electrical lesions was entirely different from that to burns due to heat. Tissues affected by electrical lesions showed distortion, and although such lesions may come to harbour micro-organisms they did not become truly septic; he strongly deprecated the treatment of electrical lesions as true burns. Dr. H. POLLAK (Prague) discussed the value of the hippuric acid test of liver function in peptic ulcer cases. He recorded numerous observations to the effect that in treated patients suffering from peptic ulceration this test showed a marked deterioration of liver function with improvement as a result of successful treatment of the gastric conditions. He pointed out that the results of this investigation were capable of giving valuable information as to the fitness of the patient for surgical intervention.

Prof. M. REISS (Prague) recorded numerous experimental observations on the role of the corticotrophic hormone in secondary shock. Using rats he had found that the shock induced by the intraperitoneal introduction of hypertonic glucose could be largely prevented or neutralized by the corticotrophic hormone; further that the withdrawal of this hormone by ablation of the hypophysis rendered the animals more susceptible to shock. He suggested that shock could be more readily treated by the use of the corticotrophic hormone, which stimulated the production of a whole series of hormonic responses, rather than by the use of cortin or such similar preparations of the adrenal cortex alone. Prof. Reiss showed a hand-haematocrit for field use, capable of being worked from any rapidly rotating wheel such as that of a jacked-up motor-car.

Dr. J. UNGAR (Prague) discussed the principles underlying the testing of chemotherapeutic substances *in vitro, in vivo,* and in tissue culture. Dr. B. L. DELLA VIDA (Rome) demonstrated crystals of the various types of drugs of the sulphonamide group as appearing in the urine of patients under treatment. Dr. ELIZABETH DELIKAT (Bratislava) demonstrated films and cultures from a case of acute and fulminating pulmonary aspergillosis. Dr. I. FREIDMANN (Prague) demonstrated the preparation and use of commercial dried egg powder as a substitute for fresh eggs in the preparation of media for the cultivation of tubercle bacilli. Dr. F. PICK (Prague) showed microscopical sections from the organs of a child who died showing extensive and generalized cellular reactions which had been variously diagnosed as infectious granuloma or as due to a congenital lipoid dystrophy.

At a meeting held at Derby on Dec. 3 it was unanimously decided to revive the School Medical Group of the Society of Medical Officers of Health, and a temporary committee was formed. All those who are interested, whether at present members of the Society or not, are asked to communicate with the honorary secretary, Dr. A. A. E. Newth, 28, Chaucer Street, Nottingham.

The second annual report of the Bristol and District Divisional Hospitals Council bears out the contention of its opening paragraphs that the setting up of this council was a wise procedure in view of Government declarations on hospital policy. Recommendations have been made to the Bristol Planning and Public Works Committee on the principles to be observed in siting new or extended hospitals in the area. The council has received the report of the Bristol Hospitals Commission, and a subcommittee has been appointed to consider the geographical problem of replanning hospital and medical services in the area. The council's report on the future of pathological services in Bristol is completed and has been submitted to the Public Health Committee, the University, and Bristol Royal Infirmary. During the year a second grant of £1,000 was made by the Nuffield Trustees towards the development of hospital and ancillary medical services in the area, and of £250 towards the Council's administrative expenses. Work is still proceeding, states the report, on the preparation of a constitution for a central hospitals contributory scheme on the lines suggested by the Bristol Hospitals Commission. Reference is made to this also in a report for 1942 just to hand of the Bristol Hospitals Fund, "the official contributory scheme for Bristol voluntary hospitals." The Fund states that it has always been a keen advocate of union of all contributory schemes in the area. In the meantime it publishes some striking figures: its total income in its first year (1939) was £476, last year it was £48,394; the total income of the five Bristol associated voluntary hospitals was £178,561 in 1939 and £252,204 in 1942, the hospitals showing a surplus over expenditure of £8,027 in 1941 and £4,635 in 1942—no small testimonial to the value of contributory schemes.

Correspondence

Teaching of Anaesthetics

SIR,—The advance in modern methods of anaesthesia tends to make this branch of medicine more and more the field of the specialist. This is obviously of great advantage to the patient and surgeon for all major surgical work, and it is increasingly recognized throughout the country that the best surgical results are obtained where anaesthetist and surgeon form part of a highly specialized team. This tendency is likely to develop in the future and is much to be desired.

I would, however, put in a plea for more adequate training for the medical student in those comparatively simple forms of anaesthesia which he will be called upon to administer as soon as he is qualified. It is a commonplace these days to meet newly qualified doctors who are incapable of giving any inhalation anaesthetic unless provided with their own particular form of gas-and-oxygen apparatus, though some are more confident than one could wish of administering the less controllable intravenous barbiturates, often with no means of resuscitation at hand.

This is a sad condemnation of our present methods of teaching anaesthetics. The contention that anaesthetics should be left to the specialist alone is an impracticable one. The newly qualified doctor is expected to do minor surgical work—such as opening abscesses, circumcisions, removal of nails, sebaceous cysts, etc.—and he should equally be capable of giving some simple form of anaesthesia for small surgical procedures.

I would suggest that the proper place for teaching medical students practical anaesthesia is, as a rule, not the main operating theatre but the dental department, the casualty department, the minor operating theatre, and the labour ward. Here they can be taught the principles of general anaesthesia, the prime importance of maintaining a clear airway whatever form of anaesthetic they employ, the use of such apparatus as they are likely to meet in general practice—i.e., simple N_2O apparatus, open-mask methods, local and intravenous methods—and how to deal with the results of an inadvertent overdose. They would not be precluded from attending operations in the main operating theatre as onlookers, but many surgical cases are as unsuitable for the anaesthetist to put into the charge of the student as they would be for the surgeon to hand over to his dresser. The student is often invaluable as a supporter of the jaw, a watcher of the rebreathing-bag, or an observer of the blood pressure, but it is not justifiable to make these duties the substantial, if not the main, part of his anaesthetic training, as so often happens to-day.

Honorary anaesthetists to teaching hospitals should naturally be prepared to give the necessary time to teaching the simple methods, and it is here under present conditions that difficulty often arises. They cannot afford the time to attend dental sessions, the casualty department, and minor surgical operations, as well as administer anaesthetics for long surgical lists. Some solution must and doubtless will be found for this. A sounder groundwork must be provided for the training of the casual anaesthetist so that he may recognize the anaesthetics he should or should not embark upon. This will in time raise the general standard of anaesthesia and improve the status of the specialist anaesthetist.—I am, etc.,

London, W.1. K. G. LLOYD-WILLIAMS.

Nitrous Oxide Anaesthesia

SIR,—Dr. R. Blair Gould's article on nitrous oxide anaesthesia (Nov. 13) is unconvincing for several reasons. As a "non-expert" anaesthetist who has, nevertheless, occasion to give a number of anaesthetics, I should like to mention the following: (1) In his opening words Dr. Gould refers to nitrous oxide as being considered the "best" anaesthetic. Surely this statement is somewhat sweeping; there is, unfortunately, no such thing as a "best anaesthetic"; each individual case must be considered on its merits. (2) Dr. Gould sees fit to disagree with such authorities as Clement and Macintosh after first quoting them at the beginning of his article. (3) Throughout

his article Dr. Gould fails to draw a proper distinction between the nitrous oxide anaesthesia for minor surgery, dentistry, etc., and the "secondary saturation" technique of McKesson for major surgery. (4) No clinical evidence is used by Dr. Gould in the support of his views. (5) The statement that "anaemic patients, in surgery, provide the great majority" is scarcely true of minor surgery or dentistry, but here again no distinction has been drawn.

In the course of some sixty-odd nitrous oxide anaesthetics administered in this establishment, the majority having been given by the nasal route for dental extractions, no instance of nausea, headache, or vomiting was noted, though it is admitted that patients judged likely to be anaesthetic-resistant were usually given an intravenous barbiturate. The advantages of nitrous oxide for these patients are its simplicity and the portability of apparatus, quick recovery, and freedom from after-effects. It has been my experience that the above method functions very satisfactorily for minor surgery and dentistry, and anoxaemia need not be present provided that some experience has been gained in its use, and that an intravenous barbiturate is available for those cases judged to be unsuitable for nitrous oxide. In using the gas for major surgery a full-scale Boyle's (or similar) apparatus is required, including the necessary auxiliary agents which the anaesthetist should be prepared to use, as most authorities are now agreed that the secondary saturation technique has little to commend and much to condemn it.—I am, etc.,

M. H. W. HOLLOWAY,
Surg. Lieut., R.N.V.R.

Trigeminal Paralysis after Trichlorethylene Anaesthesia

SIR,—Dr. McAuley's memorandum (Dec. 4, p. 713) describing cases of trigeminal paralysis following closed-circuit anaesthesia with trichlorethylene is opportune. Similar, though at present unpublished, cases are known. Stüber (*Arch. Gewerbepath.*, 1931, **2**, 398) reviews the literature relating to the toxicity of trichlorethylene from the industrial point of view, and describes a further collection of cases presenting similar features. Briefly the specific toxic effect is attributed to possible decomposition products. It is pointed out that trichlorethylene may decompose to a variable extent when exposed to a temperature certainly lower than that reached by certain brands of soda lime during reaction, and also in the presence of caustic soda.

Hewer (*Proc. roy. Soc. Med.*, 1943, **36**, 463) refers to cases following the use of previously contaminated trilene. Certainly in many ways the available evidence for decomposition products being formed within the apparatus itself is unsatisfactory. However, under the circumstances, and having in mind the clinical course of many of the cases already known, it would seem wise to reconsider the use of trichlorethylene in the closed-circuit parts of anaesthetic apparatus, where possible toxic substances would collect and concentrate, at least until further observations have thrown more light on the problem.—I am, etc.,

Hillingdon County Hospital, Middlesex. H. J. V. MORTON.

Treatment of Facial Palsy

SIR,—In the *Journal* of Dec. 11, in the annotation on treatment of facial palsy, this pontifical statement is made: "The test for faradic excitability does not provide any useful information in forming a prognosis." Unfortunately, scarcely any neurologists of to-day have received any training in testing electrical reactions of paralysed muscles, and they depend on reports sent from the massage and electrical departments, which to my knowledge are only too frequently quite unreliable. When I was house-physician at the National in 1895–7 the two residents had to do all the electrical tests themselves, and so we by practice acquired a knowledge that has proved invaluable in later life in assessing the severity and prognosis of lower neurone lesions. I may say at once that I disagree entirely with the statement I quote above from your article. Proper testing with the faradic and galvanic currents will give absolutely certain information as to the severity and prognosis of facial palsy and of other paralysed muscles.

If the muscular contractions are still active to faradism ten days after the damage has occurred, it is quite certain that the nerve injury is slight and will recover. At the same time the contractions to the galvanic current will be brisk, not sluggish. The polar reactions, whether A.C.C. or K.C.C. is the greater, are of little importance. If faradic muscular irritability is totally lost ten days after the onset of the palsy, and the galvanic reactions become sluggish, then we know at once that the lesion is severe, and will lead to marked secondary contracture with overaction, and only partial recovery. If in addition to the faradic loss the galvanic reactions after a period of hyperexcitability slowly diminish and disappear after 4 to 6 weeks, then no recovery at all is likely. The only exception is when a nerve is damaged by compression, as may happen from scar, or by a haemorrhage in the bony canal. Here the loss to faradic irritability and the presence of full reaction of degeneration described above prove a severe lesion, which will be followed either by no recovery, or only slight, and accompanied by severe contracture, and perhaps clonic spasm, unless the nerve is decomposed or grafted.—I am, etc.,

London, W.1. WILFRED HARRIS.

Ophthalmia Neonatorum

SIR,—Many years ago, when I was assistant to Dr. Henry Jellett, argyrol was substituted for silver nitrate. The late Mr. Crawley, who was consulting oculist to the Rotunda, said he thought this step was a mistake and that the incidence of ophthalmia, which at the time was infinitesimal, would increase. He was correct! Very soon Dr. Jellett ordered silver nitrate to be used as a routine again: ophthalmia scarcely ever occurred.

Times may have changed, but in those days 1% silver nitrate seemed to prevent ophthalmia, and argyrol was definitely less effective. During my own Mastership, when 1% silver nitrate was used as a routine, there were 7 cases during the 7 years—i.e., 7 in upwards of 16,000 deliveries. We felt that if the disease occurred it was due to the fact that the silver nitrate had been carelessly applied.—I am, etc.,

Dublin. BETHEL SOLOMONS.

"Duodenitis"

SIR,—In the *Journal* in 1937 I suggested that results of the radiological studies of the mucous membrane in examinations of the alimentary tract should be received with reserve, and strongly condemned the radiologist who claimed that by employing this new technique "no duodenal ulcer would now go undetected." In fact at that time I recorded an instance of a case diagnosed by the "Berg technique" (which, incidentally, contradicted an earlier diagnosis in the same case, where other radiological technique was employed), while at operation no ulcer was discovered. This therefore supported the contention that no present-day method of radiological investigation is infallible. To-day I endorse these remarks, and fully support the observations of Sir Henry Tidy (Oct. 16, p. 473) that "radiological studies of the mucous membrane leave an unsatisfactory position." Dr. Charles Wroth (Nov. 27, p. 688) also deprecates the term "duodenitis," which Sir Henry Tidy rightly states "is a radiographical conception without clinical, surgical, or pathological support, and without agreement among radiologists."

Dr. Wroth details a number of observations as noted in the routine examination of the typical difficult case, in which the outstanding features are spasm of the pylorus and duodenum with some tenderness of the duodenal "cap" itself. For want of a better title he labels this "duodenitis" with inverted commas. For many years past I have rejected the term "duodenitis" in such cases, and prefer to describe this appearance as that of "an irritable duodenum which may be the result of a small mucosal or submucosal ulcer not as yet having a crater large enough to be demonstrated by *x*-ray examination." If the spasm of the "cap" is mild or indefinite, with tenderness present but not severe, then it is always wiser to suggest to the clinician that the patient should be placed on a mixture containing tr. belladonnae min. 5 t.d.s. for 7 to 14 days, and then repeat the opaque meal and determine whether or not the spasm has disappeared. My experience is that it is preferable to "soak" the patient in belladonna rather than give a single injection of atropine hypodermically,

while to repeat the opaque meal on the same day is to my mind a waste of time. If after this course the spasm and the tenderness still persist, then the evidence is very much in favour of early ulceration and probably of the mucosal type. This type of ulcer is similar to the small pin-point haemorrhagic ulcer found in the stomach, and which on occasion can produce quite a large haemoptysis and almost invariably eludes demonstration by an opaque meal and *x*-ray examination.

It should be kept in mind that only a small percentage of duodenal ulcers present an ulcer crater that can be demonstrated by *x*-ray examination. Further, the large proportion of those showing craters have a history of long standing, but with recurrent attacks an acute exacerbation may simulate an ulcer in the acute stage. If the radiologist always waited until he could demonstrate a definite ulcer crater before diagnosing a duodenal ulcer, then he must assuredly miss many cases of early ulcer, which entails the art of finer radiology.

I prefer to retain the term "chronic duodenitis," and use it only for those cases showing chronic inflammatory changes of the duodenum, where the walls show definite thickening, sometimes with "honeycomb" effect of the structure. In these cases the primary cause has most probably been an ulcer, now healed but finally leaving these general hypertrophic inflammatory changes of the walls, which remain more or less for long periods afterwards and are noted at subsequent examinations.—I am, etc.,

London, W.1. NORMAN P. HENDERSON.

Radiology

SIR,—In your issue for Nov. 27 you publish an article and four letters concerning radiology which together illustrate a principle very imperfectly appreciated by most practitioners—namely, the principle of relative evaluation of *x*-ray findings. Some doctors expect the radiologist to make a complete diagnosis in every case, while others profess complete distrust of the radiologist's report; the ideal course, in which the *x*-ray report on a given case is considered as one link in the diagnostic chain and is given neither too much nor too little significance, is rarely followed. Two great authorities—Sir Arthur Hurst and Dr. A. E. Barclay—have indicated the value of the *x*-ray examination in diseases of the gastro-intestinal tract, but in other fields the position is not at all clear.

Dr. Kemp, in his article on the use of pheniodol in cholecystography, gives a most lucid and balanced exposition of the value of the method described, and indicates the exact clinical significance of the results of the examination, while in contrast, letters on pneumonitis, duodenitis, and the value of *x*-ray diagnosis in tuberculosis show the confusion which may be produced in other forms of examination; and Dr. Norman Henderson finally makes an appeal for the rationalization of the practice of radiology. It has been most unfortunate that the science of diagnostic radiology depends on the interpretation of screen and film images which look as if they were actual pictures of the part concerned, and this has made many people imagine that radiology is an exact and fundamental method of examination, in which the living body is visualized and from which definite information can be obtained about its structure and function. No one imagines that an electrocardiogram or a test-meal curve is anything more than the graphical representation of the results of certain investigations, but an *x*-ray film is nothing more than another such graph, which can only be interpreted by comparison with records of similar appearances obtained in the past from cases of known disease. It is quite unjustifiable and misleading to attempt to place direct values on abnormal appearances which do not correspond with any known pathological condition, and such diseases as "duodenitis" and "pneumonitis" owe their existence to the need for terms to describe consistent *x*-ray appearances obtained in the absence of any clear-cut clinical complexes. In both these cases there must be some disease present, but only radiologists are convinced that a definite pathological entity exists, and I must admit that I often find it convenient to describe my *x*-ray findings in these terms, just as Dr. Wroth states in his very apt remarks on duodenitis. Dr. Fawcitt points out in his letter on tuberculosis that an *x*-ray examination of the chest may produce *x-ray evidence* of disease, but does not *diagnose* the disease, and his comments apply to all examinations.

Let it be quite clear what information can be obtained from an *x*-ray examination. First, we cast a shadow of some part of the body on a fluorescent screen or film, if necessary filling hollow organs with contrast media to enable them to make a shadow, and then we study this shadow and compare it with other shadows which have been obtained in the past and have been found to accompany certain pathological conditions. If we find that it resembles one of these we say that there is *x-ray evidence* of that disease and no more than that. We are not justified in saying that the behaviour of certain hollow viscera when filled with barium bears any relationship at all to their normal behaviour when dealing with physiological products, and the existence of spasm, for example, in a barium-filled colon is, as Sir Arthur Hurst recently pointed out in your columns, no indication that any spastic condition actually exists in that colon. Similarly, there is no real reason why the excretion of iodine compounds from the gall-bladder and kidneys should be related to their excretion of body substances, and, as Dr. Kemp stresses, we must be guided in our evaluation of the shadows cast by the foreign substances we place in organs by considerations of criteria which have been established by following examined cases into the operating and post-mortem rooms.

The radiodiagnostician can only perfect his power, first, by assimilating the results of past examinations, and, secondly, by following any cases which do not conform to past experience into the wards, theatre, and mortuary, and by discussions with clinical colleagues so that the correct value may be placed upon any unusual sign. Clinicians may be of the greatest possible assistance in such cases by correlating physical signs with the *x*-ray appearances, and Wing Comdr. Trail has published several most instructive works on chest examinations from this point of view. There is a most unfortunate tendency for radiology to drift away from clinical medicine and to attempt to become a separate science, and this is obviously not in the best interests of medical progress. It is also unfortunate that the present training of radiologists lays very little stress on the clinical aspects of disease, and the Cambridge D.M.R.E., which was the only diploma to insist on any clinical experience, is now withdrawn. The higher diploma of F.F.R. requires a high clinical standard, but few radiologists aspire to this very difficult qualification, which has acquired very little recognition outside the world of radiology.

There appears to be need for some new authority to supervise the training of future radiologists along the lines of the Royal Colleges, and to direct the general lines of radiological research into clinical channels. The present three radiological institutions take no part in education, but possibly the British Institute of Radiology may resume its educational activities, which lapsed with the Cambridge D.M.R.E., on a broader scale after the war, and so avoid forming yet another body which may, like the Faculty of Radiologists, not entirely fulfil the purpose for which it is organized.—I am, etc.,

Hove. E. MILLINGTON.

Shock Treatment of Mental Disorder

SIR,—The even course of medical evolution has been interrupted and set back, according to my view, by the treatment of mental disorder by the induction of fits—a short cut to psychotherapy and a wonderful way of doing psychiatry without having to know anything about human nature. I do invite general practitioners to state clearly whether they favour this treatment, which has features that remind one of the more violent of the mediaeval attempts to drive out evil spirits.

Actually I do not see how permission is ever obtained for the treatment to be done, as there is good evidence that when an adult gives permission for it to be done on himself he does it out of an impulse which is akin to a suicidal one. What makes a man feel like hurting himself makes him feel like allowing and even asking for shock treatment. The ethics of collaboration with this suicidal impulse is doubtful. It must be remembered that the treatment is certainly not being given only to hopeless cases; it is being tried in all types of psychological illness. Personally, I would never give permission for this shock therapy, simply because I see no way of proving that it is harmless. But I think that the profession as a whole could reasonably oppose the treatment on the grounds that it offers a by-pass to true understanding of human nature,

just at a time when we are becoming able so tremendously to enrich our medical practice through the assimilation of recent researches in psychology.

I would go further. Planning, if it is to be as good as jogging along, must take into account unconscious factors. There is such a thing as a doctor's unconscious antagonism to ill people who do not respond to his therapy. In my opinion shock therapy is too violent a treatment for us to be able to make use of it, at the same time being sure that we are not unconsciously intending it to hurt the patient. Psychiatrists must know themselves very well indeed to feel happy when administering the treatment, and to withstand criticisms and even antagonism, which we must expect sooner or later in the lay press. (Attention has been drawn by your correspondent Dr. Martin Cuthbert (Nov. 20) to one type of public reaction.)

This letter is intended as an invitation to the profession generally to discuss this matter, which, on account of its ethical implications, cannot remain a purely psychiatric or scientific problem. And I should very much like to know how many there are who feel as I do that no one could have the right to sanction the giving of fits to a child.—I am, etc.,

London, W.1. D. W. WINNICOTT.

Vasoconstrictors in Coryza

SIR,—I read with pleasure the thoughtful letter of F/O T. M. Davie (Dec. 11, p. 763). One must respect the desire not to interfere with the defence mechanism of the nose. I feel, however, that this defence mechanism can be helped.

During the last few years I have had a series of *x*-rays of the nasal sinuses during an attack of coryza. The local treatment of these attacks has fallen into three groups: (1) no local treatment; (2) ephedrine 1% in normal saline, and volatile vasoconstrictors; (3) vasoconstrictors plus the addition of local medicaments which would not damage the cilia or inhibit ciliary action. Groups 1 and 2 showed no variation in the incidence of either sinusitis or transient subacute otitis media; whereas in group 3, even in those severe catarrhal epidemics which are prone to develop sinus complications, these complications were greatly diminished, and those which did occur were mild.

My tentative conclusion therefore is that nasal vasoconstrictors are of real therapeutic use if the shrinkage of the nasal mucosa is not carried to excess by too strong a vasoconstrictor and the ironing out of the nasal mucosa is used to allow access of a bacteriostatic drug.

On physiological grounds I feel that the best vehicle for any nasal application is normal saline. I have had excellent results with ephedrine and argyrol in normal saline, but the solution must be in a stable form, otherwise unpleasant side-effects, such as nasal congestion and crusting of the nose, are produced, and these, of course, increase the risk of sinus or middle-ear involvements. Further, I think that the best way of applying any solution to the nose is by means of a good nasal spray.—I am, etc.,

London, W.1. E. CAREW-SHAW.

Examining the Neurotic

SIR,—Surg. Lieut.-Cmdrs. Stephenson and Cameron are to be congratulated on their comprehensive review of the symptomatology of anxiety states in the Navy (Nov. 13, p. 603). This does not materially differ from the symptomatology of anxiety states identified in the Army.

The reiteration of symptoms alone, which is so prevalent in current literature, is unlikely to advance our knowledge of anxiety states with special reference to their precipitation in certain types under Service conditions. It is important, therefore, to correlate personality types with the relevant anxiety reaction and consider these in conjunction with remote and recent environmental factors. We wonder whether the authors have not confused physiological anxiety with morbid anxiety when they state that "the general result of our observations has been that there is a remarkable capacity for recovery from anxiety states in the averagely endowed and stable individual." We venture to suggest that the averagely endowed and stable individual does not develop an anxiety state unless predisposed to neurosis, and that otherwise the recovery of such individuals after exposure to various stresses is not in any way remarkable. The prompt alleviation of symptoms is the most necessitous part of any treatment, and the indications for the choice of treatment must be determined by the clinical condition, the intelligence of the patient, and any restricting environmental factors.

We cannot subscribe to the opinion that gastric investigation should be undertaken in all cases of neurotic dyspepsia prior to the psychiatrist being asked to examine them, for the reasons that hospitalization and investigation tend to produce gastric fixation, and psychiatric examination can in many instances positively identify neurotic dyspepsia with consequent economy in time and hospital accommodation.

Sir Henry Tidy (*Journal*, Oct. 16), writing on peptic ulcers and dyspepsia in the Army, states that "prolonged investigation and minute inquiries tend to produce or increase a psycho-neurotic factor, and a man rapidly progresses to the state of being useless as a soldier." This is particularly true of dull, highly suggestible patients who are prone to exhibit neurotic dyspepsia, and who, if investigated for a transient gastric disturbance, may permanently imitate all the symptoms which they hear and observe in the wards. The final result may well be a gastric hypochondriasis. We contend that neurotic dyspepsia should be identified by means of positive psychiatric criteria and not by the negative findings of a gastric investigation.

The early diagnosis and suitable treatment of neurotic symptoms is the only effective method of precluding their hysterical elaboration and prolongation. It is hoped, therefore, that too much attention will not be devoted to the investigation of symptoms in that class of case in which prompt recognition of the neurotic constitution is so essential in deciding appropriate treatment.—We are, etc.,

ELLIS STUNGO,
Major, R.A.M.C.
E. P. H. CHARLTON,
Captain, R.A.M.C.

A Case of Conversion Hysteria

SIR,—It is encouraging to find an analytical article, however untechnical, in the *British Medical Journal*, and Dr. Ranyard West is to be congratulated on having made his material so interesting, not to say exciting.

One can understand that many omissions were doubtless due to lack of space and need for condensation, but I cannot feel that even this is adequate excuse for the omission of all sexual factors in the aetiology. These factors are relatively specific in all such cases, both psychologically (early sexual traumata, libidinal fixations, inhibitions and regressions) and, more particularly, on a current physical plane. One notices that in the case referred to the patient is engaged to be married, but is evidently not experiencing normal sexual relationship, with the result that tumescence is presumably relatively in excess of detumescence. One can only think that the omission of this important aetiology is in deference to an assumption of general medical bias. If so it seems a pity, as it detracts from the practical and scientific value of this clinical note.—I am, etc.,

London, W.1. CHARLES BERG.

Scabies and Impetigo

SIR,—Dr. Frewen Moor (Dec. 11) appears to suggest that scabies is commonly transmitted by the communal use of towels. Major Kenneth Mellanby has investigated this matter, and in his book *Scabies* makes the following statement:

"Communal towels, particularly in schools, have often been blamed for transmitting scabies. I do not think that these are of much importance. In some experiments towels have been used by many hundreds of cases of scabies and later used again by uninfected volunteers without a single instance of transmission."

No doubt Dr. Moor has evidence, equally well controlled, to prove Major Mellanby's statement is incorrect, and if he will publish such evidence the profession will be much in his debt.

As to impetigo, I imagine that the danger of spread by towels has entered the minds of most dermatologists, even though they may enjoy undisturbed nights, and that they take measures to advise their patients accordingly.—I am, etc.,

London, W.1. A. M. H. GRAY.

Iodine Deficiency

SIR,—Referring to the letter of Dr. W. Mitchell Stevens (Nov. 13, p. 620), I should like to remark that the Swiss and, one year later, the at-that-time still independent Austrian Governments realized the value of iodine in daily food long before the publication of Dr. Stevens's articles and pamphlet. The Austrian Salt Monopoly was selling, since the year 1923, a so-called *Vollsalz* (full salt), which contained in each kilogramme of salt 5 mg. of iodine (consuming about 10 g. salt daily means for the day 0.05 mg. iodine). The addition of iodine to salt was introduced on the recommendation of the Nobel prize winner Wagner-Jauregg of Vienna, the inventor of the malaria therapy in G.P.I., as prophylaxis of the endemic goitre. He suggested general use and sale of iodized salt as early as 1898, but he himself mentioned that Chatin as early as 1852 recommended iodine as prophylaxis against goitre in individual cases. Dr. Stevens should therefore not wonder that Dr. Fischler, the "German scientist," did not mention him as the author of the idea.

I should like to add that J. Wiesel and J. Kretz (*Wien. klin. Wschr.*, 1928, p. 234), both of Vienna, called attention to the harm caused by the general sale of iodized salt, and that after careful investigations and many interesting debates in the *Gesell. d. Aerzte* in Vienna the order was given in Austria to sell pure salt generally and iodized salt only on demand.—I am, etc.,

Cambridge. ALBERT BAUER.

Ligature of Innominate Artery

SIR,—Mr. G. F. Langley's interesting article on this subject prompts me to add another case to the recorded instances of this operation. During the last war, when Comyns Berkeley and I were the surgeons-in-charge of the Military Branch of the Middlesex Hospital at Clacton-on-Sea, I had to operate on a soldier who had had two severe secondary haemorrhages from a wound in the root of the neck on the right side. The bleeding came from the first part of the right subclavian artery, and it was impossible to place a ligature proximal to the hole in the vessel. I therefore exposed the common carotid and followed it down. I then cut away part of the sternum and sternoclavicular joint, and then, by means of a ring-forceps, pulled strongly on the carotid until the innominate could be reached. By means of an aneurysm needle I got a ligature of No. 6 silk round it and successfully tied it. I think I was lucky in that the innominate seemed to be unusually long. It is certain that by strong traction on the carotid the innominate can be lifted considerably.

The wound suppurated, but there was no further haemorrhage, and the man left Clacton for an auxiliary hospital quite well except for a sinus discharging a little pus. His subsequent history is instructive. He went from convalescent home to convalescent home, but the sinus refused to heal, and finally he was sent to one of the London base hospitals. The surgeon under whose care he came had no notes of his previous operation and did not know the nature of it. The sinus was therefore explored in the hope of finding a foreign body or an unabsorbed ligature. The result was a terrific haemorrhage of which the man died on the operating table.—I am, etc.,

London, W.1. VICTOR BONNEY.

SIR,—In pursuance of Mr. G. F. Langley's account of gunshot wound of the innominate artery I think the following case, which occurred in the Far East 25 years ago, should be put on record.

After a midnight brawl with Japanese sailors an American seaman was admitted to the Shanghai General Hospital with a bullet wound in the right side of the neck. He was a short, stocky man, slightly deformed with hunched shoulders, some upper dorsal kyphosis, and a left-handed twist of the head. The bullet entered the neck from behind just above the margin of the trapezius, traversed the occipital triangle, and emerged above the sternoclavicular joint. Very little actual haemorrhage had occurred, but an arteriovenous aneurysm was apparent, springing from the depths behind this joint.

On the following day the swelling had increased in size, reaching upwards to the level of the lower margin of the thyroid cartilage. As it seemed too hazardous to approach from below, I decided to try the effect of distal ligature, and tied the common carotid and jugular vein above the margin of the tumour. No ill effects ensued, and in two days' time the pulsating swelling was reduced in size by about one-third. For the next two days conditions became rapidly worse, the globular, vibrating mass filling the whole of the right side of the neck. For the first time the man's pluck and dry humour deserted him, the constant noise, swirl, and vibration prevented any rest, and immediate intervention was imperative.

The dissection to the lower margin of the tumour was through a mass of seething, frothy, pulsating tissue, quite unrecognizable anatomically. The artery deep below the xiphisternum was isolated and ligatured with strong silk, and almost immediately the huge swelling subsided under one's eyes like a pricked bladder. At the same time pulsation in the brachial and radial pulse ceased entirely, to reappear twenty-four hours later. Recovery was complete without any untoward cerebral symptoms, and in two or three days' time the man was his old humorous and contented self.

My purpose was to find the artery, whatever it was, that entered the aneurysm from below, and, not having removed any bone to reach it, I assumed it to be the base of the carotid. The signs of complete cessation in the subclavian circulation, however, unless due to a sympathetic spasm of the artery, would point to my ligature having been placed below the bifurcation of the innominate artery. The drag of the rapidly expanding tumour on the artery and the kyphotic abnormality seemed to make it possible that this was so, but I hesitate to suggest this case being added to Sir William Wheeler's list of innominate ligations.—I am, etc.,

Guildford. W. B. BILLINGHURST.

Toxic Goitre

SIR,—I should be glad if you would allow me to enlarge on the remarks on toxic goitre in the excellent and concise paper by Drs. Linnell and Thomson (Nov. 6, p. 574), with which I agree heartily. Up to 1933 the young and gifted surgeon Prof. A. W. Meyer, Berlin, had operated on 200 cases of thyrotoxic goitre as a rule with previous preparation by a 3-weeks period of rest and of iodine treatment (Plummer). Although many of these cases were in an advanced stage of the disease he had not lost a single case. A number of the patients had been sent to him by myself, and like many other doctors I have since made it a rule to have all cases of thyrotoxic goitre operated whose B.M.R. was raised by more than 30%. In all these more serious cases internal treatment by rest, C.H. diet, or *x* rays had given poor results. Since then I have seen only one failure of the operative treatment, and that proved to be a cancerous growth in the remainder of the gland leading to the fatal end.

It remains to be seen whether the most recent types of internal treatment will give the same good results.—I am, etc.,

Buxton. E. M. FRAENKEL.

Medical Boarding for the Merchant Navy

SIR,—I have read Dr. S. H. Waddy's letter (Aug. 21, p. 248) with great interest and also those of Dr. Alec Wingfield and Dr. C. E. Sundell in subsequent issues. I feel that these letters are written from two different aspects of the same subject. Dr. Waddy is speaking mainly of malingerers wishing to "sign off" who obviously will not go to the Seamen's Hospital but to their own panel practitioner, whereas Drs. Sundell and Wingfield see the genuine sick of the Merchant Navy at this hospital. I have been at sea with the Orient Line for seventeen years and have also held various posts at the Seamen's Hospital, Greenwich, and can therefore speak from both aspects.

The first point that I should like to emphasize is that the problem is different in war from peace. In normal times a man comes to sea for various reasons, but in the main because he wishes to adopt that life, and, having found a shipping company to suit his particular taste, may remain in its service for twenty years or more. These men do not malinger. On the other hand, in war, and increasingly so of late, there is the youngster who has joined the Merchant Navy because of better pay or living conditions than he would get in the Services, who has no interest in the sea or in the shipping company. These are the men who cause the trouble. There seem to me to be two major problems.

1. How to deal, on a national basis, with the man who is totally unfit for sea service and is sick most of the voyage, "signed off" on the return to the United Kingdom, goes on the pool only to return to another shipping company, and so on for the duration? I have had among my crew neurotic, depressed men, who have been invalided out of the Army as unfit for further service, also men with recurrent duodenal ulcer, etc. No short examination by a ship surgeon can avoid these cases being "signed on." My suggestion is medical history cards for every man, which would at least prevent these cases being taken on ships again and again.

2. How are we to deal with the seaman who goes on leave, reports to his general practitioner with some trivial complaint, and obtains and forwards a medical certificate of unfitness, and has to be "signed off"? This practice is on the increase, and is not entirely due to true malingering, but often to a natural tendency to "wangling" extra leave on the pool. This voyage, covering four weeks, in a crew of 350 we have had 8 cases of this kind. Sometimes, to my knowledge, in the case of a trivial complaint where the man has previously been my patient, the certificate is inaccurate. In others the certificate should never have been given. For this, blame attaches to the overworked and possibly too sympathetic practitioner. These cases, I think, can only be met by insisting on certificates from medical referees, such as Board of Trade doctors, Admiralty surgeons, Navy or Army medical officers, etc.

The problem is important, and increasingly so. It is no help to say, as Mr. Greany of the Shipping Federation states in his letter (Oct. 2, p. 435), that ships are not prevented from going to sea by the low physical standard of the crew. This is true, but the ship has to sail, and other members of the crew do the work of the sick and of the men who fail to return owing to "medical certificates." This results in increased genuine sickness, and in prejudice among the rest against the system which allows it.—I am, etc.,

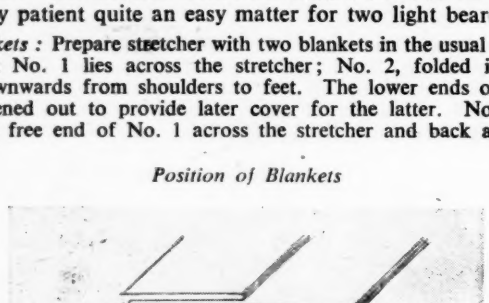
H. M. ROYDS JONES.

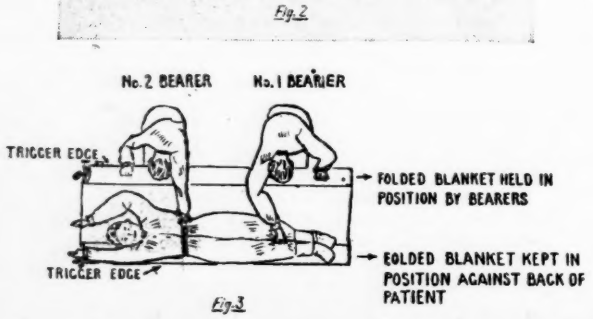
"Load Stretcher by Two Bearers"

SIR,—The following method of loading stretcher when only two bearers are available is suggested as an improvement on the present, generally accepted, R.A.M.C. mode of procedure. The modern trend of first aid is towards simplicity, ease of performance, and economy in personnel—i.e., two bearers per stretcher. The method described renders the task of loading a heavy patient quite an easy matter for two light bearers.

Blankets: Prepare stretcher with two blankets in the usual manner. Blanket No. 1 lies across the stretcher; No. 2, folded in three, lies downwards from shoulders to feet. The lower ends of No. 2 are opened out to provide later cover for the latter. Now carry the left free end of No. 1 across the stretcher and back again till

Position of Blankets




No. 2 BEARER
No. 1 BEARER
TRIGGER EDGE
FOLDED BLANKET HELD IN POSITION BY BEARERS
FOLDED BLANKET KEPT IN POSITION AGAINST BACK OF PATIENT
TRIGGER EDGE
Fig. 3

it lies over, and an inch beyond, the left pole (Fig. 1). The folded edge, which now lies approximately over the centre of the stretcher, is folded over on itself till its edge lies over the left pole. Arrange the right side of the blanket in similar fashion (Fig. 2). The free edges, which protrude from the middle of these folds, are the "trigger edges," for, on these being pulled, the whole blanket flattens out.

To Load. 1. Carefully turn patient on to his side and raise arms above shoulders. Place prepared stretcher alongside patient's back.

2. Raise stretcher to the perpendicular against his back. (Pressure between stretcher and back keeps the lower blanket folds in position.)

3. Bearers stand behind stretcher, holding upper blanket folds against pole with outer hand to keep them in place (i.e., No. 1 bearer, at foot, uses his left hand; No. 2, at head, uses his right).

4. Reaching downwards over the stretcher No. 1 grasps with his right hand the front folds of the injured man's trousers immediately above the gaiters. In similar manner No. 2 grasps the waistbelt with his left hand (Fig 3).

5. Then, *holding the patient against the stretcher* (no lifting is required), the bearers allow the latter to resume its normal position on the ground.

6. The casualty is now on the stretcher and can easily be assisted to assume his most comfortable position on the middle of No. 2 blanket.

7. The "trigger edges" on each side are now pulled out, thus freeing the blanket, which can be tucked round the patient as desired.

The advantages of this method of loading would appear to be: (*a*) It is extremely easy to carry out and imposes the minimum of effort on the bearers; two light bearers can deal with a heavy man. (*b*) Harmful movement or disturbance of the casualty is practically *nil*; therefore there is no increase of shock. (*c*) As there is no carrying of the patient by bearers, the margin of safety for him is much increased.—I am, etc.,

BOWMAN EDGAR, M.B.,
Kirkconnel. M.O., 4th Battalion Dumfriesshire H.G.

P.S.—Since writing the above I have tested the suggested "load" in the following manner: Two recruits who had joined only a fortnight before with no knowledge of stretcher work, one weighing 9st. 2 lb. and the other 9 st. 3 lb., were asked to load a sergeant who weighs 16 st. 7 lb. Using the above method no difficulty at all was experienced. An attempt to load by the R.A.M.C. method was distinctly a failure.

Agents Provocateurs

SIR,—Mr. Reginald Payne's admirable exposé of the nefarious activities of the *agent provocateur* (Dec. 4, p. 725) is strong. Yet on mature consideration it might appear overlenient toward this most deplorable practice and its instigators.

If the desideratum of "mutual confidence between a doctor and his patient" is not always achieved nowadays, it is perhaps because the patient senses that his medical adviser is insidiously becoming less of a true guide, counsellor, and friend, as his lawyer still is, and assuming more often an executive and even a quasi-judicial role, as Mr. Payne has pointed out. But this aspect of the doctor's work is merely emphasized by wartime conditions of life and work. Where he has to grant or withdraw a certificate of a consequential nature, the conscientious medical man is always alive to his legal status and responsibilities, and tries fully to understand and justly to determine the issue between the patient and his employer, or the State, as the case might be; *a fortiori* he will do so in time of war. In return for this service to the community, is he not entitled to expect that the evidence laid before him will be substantially true? Ought it not to be an offence to fabricate evidence for the purpose of getting a certificate under the National Service Acts or even the N.H.I. Act?

The honest G.P. will own frankly that he often gives a certificate without examining the patient properly, for the proper examination so often demands the use of apparatus he has not got and the co-operation of colleagues not to hand. If a man makes out anything like a prima facie case for a duodenal ulcer (albeit verbally, with no physical signs) is he to be refused his note pending the *x*-ray examination and the test-meal? Shall we be influenced by the fact that he may easily be a malingerer who has conned his symptom-complex from some simple book on medicine for the layman? The judge or magistrate would admit that he has to make a host of "interlocutory injunctions" or "provisional orders" before he has fully gone into the rights and wrongs of a case.

In practice there may be little to be feared. The *agent provocateur* will always have to be a new case in a stranger,

and fortunately we know at least 95% of our human material and in a given individual can roughly gauge the "coefficient of exaggeration" (if I may coin the phrase) and duly allow for it. But in principle the thing is all wrong. It ill becomes an Executive that shows such a complete failure to understand the true doctor-patient relationship to be proposing the assumption of an autocratic control over and management of all medical transactions. A few more cases like this one and the Government will have alienated its most fervent supporters of control within the ranks of the profession. Such a policy will do more than all the resolutions of committees and conferences to dispel the last fond hankerings after the projected State Medical Service.—I am, etc.,

Birmingham. PETER PARRY.

The Army's Steel Helmet

SIR,—There have recently been several references in the lay press to the future issue of a more efficient steel helmet for the armed Forces. The issue of this new-pattern helmet seems long overdue. The present type was introduced in the last war to give protection against falling shrapnel—i.e., rounded metal balls which were discharged when the shrapnel shell burst in the air. This type of shell is now obsolete, and the present need is for protection against bomb and shell fragments moving more or less horizontally. For this reason a design of helmet that affords protection to the side of the head and the back of the head and neck is essential.

The brim on the present old-fashioned helmet was useful against small objects falling nearly vertically, and is still useful for the police, wardens, and others who have to be out of doors in a heavy anti-aircraft barrage. But in the front line there is the danger that blast from shells or bombs bursting on the ground near by may get under the brim and throw the helmet forcibly upwards, causing injury to the neck by traction on the chin-strap. As the old-fashioned helmet is worn high up on the head it is liable to fall off during violent combat.

It is to be hoped that a large-scale issue of the new-pattern helmet, in which the old faults are eliminated, will be made with the least possible delay. The present intention, so far as can be learnt from Press reports, is to withhold the new helmet until an individual's present one becomes unserviceable. As a steel helmet does not ordinarily wear out, the present policy would appear to delay unnecessarily an obvious protective policy. It would be of interest to know the views of cranial surgeons on the necessity for the rapid large-scale issue of the new-pattern helmet, which remedies the defects of the old model.—I am, etc.,

London, W.1. CLEMENT FRANCIS.

Pre-Nazi Medicine in Vienna

SIR,—As a native of Vienna who worked there in hospitals and in general practice for some 20 years may I be allowed to ask Dr. Alan Maberly (Nov. 20, p. 661) what he means by "State medicine in action in Socialist Vienna"?

There were in Vienna nine hospitals under State administration. One big general hospital, several children's hospitals, some other institutions, and welfare centres of various kinds were run by the city administration. A number of hospitals were private—you may call them voluntary institutions—on a non-profit-making basis. Save in a few private hospitals the whole staff were salaried, but the chiefs of the departments and senior assistants were allowed private consultant practice.

I found no difference in the treatment of the patients as human beings either here or there I wonder where Dr. Maberly found his "Case No. 793." There was nothing like that in my time, and no patient was referred to by a number. As a matter of fact, in all my 13 years of hospital practice in Vienna we used to call the patients by their names; no number was ever known to me, though, of course, each case had to have a file with a number, but this was no concern of either doctor or nurse. The treatment was the responsibility of the senior, without any outside interference. Not even the director of the hospital, though a medical man himself, had any say in the treatment.

There was certainly no "State medicine" in general or specialist practice. It was either private or health insurance practice, which latter included all specialist and ancillary services as well as institutional treatment. Thus the health insurance patient could see the specialist without cost to himself, either in the specialist's rooms or in certain clinics arranged by the H.I.; and, of course, the specialist could be consulted at the patient's bedside, if necessary, at H.I. expense. Therefore the out-patient departments of the hospitals were not overcrowded. Co-operation between G.P., specialist, and hospital was smooth and easy; there was never any difficulty about seeing the senior surgeon or physician at his round at hospital. Operations were arranged, when desired, at a time convenient to the G.P., and in any case he was invited by telephone. The family doctor was thus in a position to follow up his patients at all stages, for the mutual benefit of patient, doctor, and hospital staff. True, this smooth co-operation was only possible because the average doctor in Vienna was not so overworked as his British colleague, and usually there was no morning surgery occupying the better part of the morning.

As to the political side, the Government of the Republic of Austria, which controlled the nine State hospitals, was never Socialist, though for a short time, in a Coalition Cabinet, the Socialist Prof. Tandler was Under-Secretary of State for Health. He was later, as an alderman, responsible for the health services of the City of Vienna, which included, as mentioned above, a fraction of the hospitals only. His work in this sphere was undoubtedly to the credit of the Socialist administration which was then in office.

I am grateful for Dr. Maberly's kind remarks about the Viennese doctors and surgeons, but cannot see his point in comparing them with tax collectors. I felt it a duty of gratitude to my old teachers, as well as to this hospitable country, its splendid medical men and women, and its admirable people to correct a slight misconception.—I am, etc.,

Birmingham. E. REICHENFELD.

Medico-Legal

FRACTURE OR PERTHES'S DISEASE?

In a case which came before Mr. Justice Oliver at the Leeds Assizes on Nov. 24 Mrs. Wheeler claimed damages against Dr. F. J. Stevenson on the ground of his alleged failure to diagnose a fracture of the neck and head of the femur following an accident when she was knocked down by a motor car in January, 1937, and after receiving emergency hospital treatment for injuries to the head and bruising of the right hip, came under the care of Dr. Stevenson, her panel doctor, who attended her for a period of about three weeks. She further alleged that his failure to recognize the condition or advise *x*-ray examination resulted in the fracture remaining undetected until March, 1943. At the time of the accident Mrs. Wheeler was aged 27 years.

The defence, which was undertaken by the London and Counties Medical Protection Society, claimed that the plaintiff had never suffered a fracture and that her condition was due to another cause—namely, Perthes's disease (osteochondritis deformans juvenilis; pseudocoxalgia).

Mrs. Wheeler stated in her evidence that she complained of pain in the hip to Dr. Stevenson, that he examined her hip once or twice and told her she could get up. When she did so her leg was stiff and her hip painful. Before she returned to work she again saw Dr. Stevenson as her hip was painful, and he told her it was rheumatism. She continued at her work until 1938 when she married, and although she had continued pain she did not consult a doctor until 1942. It was then, as a result of *x*-ray examination, that she was told that she had an old fracture of the neck of the femur, impaction of the head of the bone, comminution of the head, and there appeared also to have been a fracture of the roof of the acetabulum.

Mrs. Wheeler called Mr. R. Broomhead, F.R.C.S., Dr. J. A. Thomson, and Dr. W. A. Rowden. The Society, on behalf of Dr. Stevenson, called Sir Charles Gordon-Watson, F.R.C.S., Dr. H. K. Graham Hodgson, and Brigadier W. Rowley Bristow, F.R.C.S. Brigadier Rowley Bristow, in his evidence, said he considered the *x*-ray photographs revealed evidence of long-standing abnormality in the hip-joint which had occurred during growth. He saw no evidence of a fracture. His evidence was supported both by Sir Charles Gordon-Watson and by Dr. Graham Hodgson.

In his judgment Mr. Justice Oliver said that the plaintiff had to satisfy him on two points: (i) that the doctor was negligent, and (ii) that as a result she had suffered damage. He went on to say that if the plaintiff satisfied him as to negligence he was quite satisfied that she had suffered no damage. He was quite satisfied that

Mrs. Wheeler suffered from some congenital disease; that she was no worse to-day than she would have been; that both a fracture and the disease would have brought about osteo-arthritis, from which she was now suffering; that he was satisfied that if there was a fracture there was no displacement; that no surgical treatment could have been carried out; and that without deciding one way or the other whether Dr. Stevenson was or was not negligent, he was satisfied that if there was a fracture and it had been treated the lady would have been no better off. In fact she might have been worse off. He therefore gave judgment for the defendant with costs.

Obituary

Dr. LAWRENCE TEMPLE BOND, whose untimely death occurred at Westcliff-on-Sea on Dec. 1, had a distinguished academic career and was an outstanding athlete. He entered Gonville and Caius, Cambridge, from Sherborne School with a scholarship in 1924, and gained 1st-class honours in pathology in Part II of the Natural Sciences Tripos of 1928. He then went on to St. Thomas's Hospital with a university entrance scholarship and qualified in 1931. He took the M.A., M.B., B.Ch. degrees at Cambridge in 1934, after serving as casualty officer and house-physician at St. Thomas's and holding a research post in the laboratory of the late Prof. L. S. Dudgeon. Before settling at Westcliff as director of the pathological department of the Southend General Hospital Dr. Bond had been for a time senior assistant pathologist at the Royal Sussex County Hospital, Brighton. His writings include papers on sternal puncture in blood disorders, on congenital haemorrhagic telangiectasia, and on the pathological aspect of chronic leucorrhoea (*B.M.J.*, 1937). He took up pole vaulting at Cambridge, gaining a half-blue in 1927, and made the English national record in 1930 with a jump of 12 ft. 6 in. He was a member of the Olympic team at Amsterdam in 1928, and represented his country in the Empire Games tournament in Canada; he also won A.A.A. championships.

Dr. JESSIE MILNER CAMPBELL GRAY, a veteran medical missionary, died suddenly at her home at Church Stretton, Shropshire, on Dec. 6 in her 85th year. Dr. Gray was the eldest of seven daughters of the Rev. A. C. Gray, for many years a Baptist minister of Lewisham. She was a student at the London School of Medicine for Women from 1888 to 1892, when she graduated L.R.C.P.&S.Ed., L.R.F.P.S.Glasg., and proceeded to the mission field in India. The first post in connexion with the Zenana Bible and Medical Mission was at the Victoria Hospital, Benares, of which later she became the head. She was in charge of hospitals for women at Patna, Lucknow, and Nasik. While on furlough in 1916 she studied recent improvements in the treatment of tuberculosis and returned to take charge of the Sanatorium for Tuberculosis at Almora. At the age of 70 she retired to England, but at the urgent request of the Society for the Propagation of the Gospel she again returned to India to take charge of St. Columba's Hospital, Hazaribagh, until her health failed a year or two later. Dr. Jessie Gray was a woman of great determination and strength of character. Her whole active life was devoted to her work in India, where she left many devoted colleagues and friends.—R. W.

Dr. WILLIAM HERBERT GOSSAGE of Chertsey, Surrey, died on Dec. 10 in his 76th year. He was a medical student of the Westminster Hospital, and after qualification as M.R.C.S., L.R.C.P. served as house-surgeon at the hospital. He then did some temporary work in a fever hospital and acted several times as a locumtenent before settling down to practise in Chertsey, where he remained for the rest of his life. An attack of paraplegia made him a complete invalid for the last half-dozen years and caused him to give up practice.

Dr. ROBERT OWEN MORRIS, who died recently in Merionethshire, aged 81, was for many years regarded as an authority on tuberculosis. He was born at Portmadoc, North Wales, and before studying medicine was a Presbyterian Minister. He graduated M.A. of Edinburgh University in 1886, M.B., and C.M. in 1894, and M.D. in 1898; later he was elected a Fellow of the Royal Society of Edinburgh and obtained the D.P.H. of Liverpool in 1907. Dr. Morris was school medical officer and medical inspector under the Birkenhead School Board and Education Committee for the first eleven years of this century; he became Director of Education under the King Edward VII Welsh National Memorial Association, after working as chief of the dispensary staff and tuberculosis physician for that body. He also held a number of public appointments in Birkenhead, was a past-president of the Birkenhead Medical Society, and mayor of the borough in 1902–3. Dr. Morris joined the B.M.A. in 1902. He wrote a number of articles and pamphlets on health, domestic hygiene, and tuberculosis, and was a J.P. for Birkenhead and for the County of Montgomery.

As an old patient of Dr. J. M. JOHNSTON at Tor-na-Dee (writes G. H. L.) I should like to add a short appreciation to the notice of his passing in the *Journal* of Dec. 4. Johnston was that rare phenomenon, a first-class clinician and a first-class administrator. His kindness to his patients in the sanatorium was proverbial; but all knew that he expected his instructions to be carefully followed, and their regard for him was so great that none dreamed of disobeying. It was a great blow when a serious accident compelled him to resign his appointment and retire into private life. To a man of his energy enforced idleness must have been very galling, but he would bear it with fortitude and without complaining. Johnston by his skill and personality made for himself a high position in the tuberculosis world, especially in Scotland, and the profession is so much the poorer for his passing. There must be many (including medical men and women) who were his patients at Tor-na-Dee who will feel the loss of a fine doctor and a great friend. T. O. writes: The death of J. M. Johnston will be genuinely mourned by the inevitably thinning ranks of his old patients, of whom I was fortunate enough to be one. Johnston was in every respect a first-class tuberculosis physician. At a time when radiographs were of poor quality his routine examination of a chest was a model of painstaking efficiency that I have never seen approached. He bestowed the same unwearying care on the handling of each individual case. If a patient ever had a chance he had it at Tor-na-Dee. Labouring under the shadow of the ailment which eventually caused his retirement and death, Johnston used fully and unsparingly his qualities of skill, great patience, and a singularly tender and sympathetic heart. His retirement was a loss to the tuberculous, his death the passing of a very lovable friend, but among his many doctor-patients his example goes on.

The Services

The Order of Polonia Restituta (Fourth Class) has been conferred upon Major (Temp. Lieut.-Col.) W. A. D. Drummond, R.A.M.C., by the President of Poland in recognition of services in the cause of the Allies.

CASUALTIES IN THE MEDICAL SERVICES

Prisoners of War.—Temp. Major F. E. Anderson, Capt. G. I. G. Findlay, War Subs. Capt. D. Longbottom, Lieut. C. C. Ross, R.A.M.C.

Died in West Africa.—Capt. K. P. Morrison, R.A.M.C.

Universities and Colleges

McGILL UNIVERSITY, MONTREAL

DEPARTMENT OF PSYCHIATRY

McGill University announces the creation of a Department of Psychiatry and, in association with the Royal Victoria Hospital, Montreal, the establishment of an institute for research and teaching. Through the generosity of Sir Montagu and Lady Allan, a building and an extensive site have been provided.

The institute will contain fifty beds for patients suffering from early and acute psychiatric conditions. Facilities for intensive treatment are being set up. The development of research and treatment will be major objectives, and with this in view large and well-equipped laboratories are to be provided.

The project is being supported by both the Rockefeller Foundation and the Government of the Province of Quebec. Dr. D. Ewen Cameron has been appointed to the chair of psychiatry and will also be the director of the institute.

UNIVERSITY OF MANCHESTER

The following candidates have been approved at the examination indicated:

FINAL M.B., CH.B.—O. E. Adeniyi-Jones, J. R. Archibald, Margaret A. Barber, Kathleen M. Brown, Alice I. Burke, Margaret A. Burke, J. L. Clarkson, H. Davies, I. L. Gregory, E. J. Guest, J. Hinchliffe, C. L. Holden, E. Isherwood, G. W. H. James, F. W. Johnson, F. Kratter, R. McK. Laslett, A. Marsland, T. M. Martin, T. Moss, J. F. O'Grady, A. Ramsden, F. C. Reidy, M. M. Rose, [1]J. Sharp, Elizabeth Travers.

[1] Distinctions in Medicine and Surgery.

UNIVERSITY OF DUBLIN

The following candidates have been approved at the examination indicated:

M.B., B.Ch., B.A.O.—W. E. C. Allt, W. H. Ashmore, Mary B. Kelly, H. Links, Mary E. G. Millidge (formerly Fleming), I. B. O. Ogun, O. Onibuwe, Margaret S. O'Riordan, A. K. D. Rutherford, Sheila Sheehan, D. H. Sidebottom, J. T. Sweetnam, A. P. Whyte, F. B. B. Woods.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

At a meeting of the Council held on Dec. 9, with Sir Alfred Webb-Johnson, President, in the chair, Sir Girling Ball was appointed Bradshaw Lecturer for 1944.

Diplomas of Fellowship were granted to the following candidates:

R. B. K. Rickford, G. Wynn-Williams, K. W. Powell, G. B. Jones, M. D. M. O'Callaghan, D. MacG. Jackson, B. P. Moore, A. G. Leacock, H. E. Lockhart-Mummery, R. Bewick, C. R. Rapp, H. D. Drury, W. G. Holdsworth, A. D. McLachlin, O. B. Dickinson, R. A. Christianson, Margaret R. Dix, J. D. T. Jones.

A Diploma of Membership was granted to T. A. Quilliam.

Diplomas in Anaesthetics were granted jointly with the Royal College of Physicians of London to the following candidates:

G. Bellman, J. Butler, J. A. Cochrane, Doreen M. E. Cranch, J. M. Cribb, H. W. Davies, R. G. B. Gilbert, L. M. Hampson, R. L. H. Harris, K. O. Harrison, Margaret Hawksley, R. A. C. Herron, J. T. Hunter, R. S. Kay, Rosalind S. McGowan, Dorothea B. I. Montgomerie, F. L. E. Musgrove, A. Pearlman, J. M. Piney, E. N. D. Repper, Alison Ritchie, W. M. Shearer, R. G. Sheppard, W. J. Stevens, S. V. Strong, Helen M. Wood, J. W. Woodward.

Medical Notes in Parliament

Medical Officer at Detention Barracks

Major GATES inquired on Dec. 14 whether any decision had been reached with regard to the medical officer in charge at Fort Darland detention barracks immediately before the death of Rifleman Clayton.

Sir JAMES GRIGG replied that immediately after the death of Clayton on March 17 arrangements were made for a court of inquiry to investigate and report on the cause of his death. It reported that Clayton had died from natural causes, but that his death was accelerated by ill treatment and injuries which he had received. A separate second court of inquiry set up to inquire into the medical aspect of the case found that the medical officer at Fort Darland had made an error of judgment in the diagnosis of the case after carrying out a full examination of his patient, but that he was not guilty of negligence. This opinion was confirmed by the Director-General of Army Medical Services and the Consulting Physician to the Army. Sir James Grigg said he had accepted this opinion.

The report of the Oliver Committee was published on Nov. 22.[1] Its recommendations had been and, to some extent, still were being examined. They had all been accepted in principle, and most of them were being implemented.

Sir James Grigg circulated a statement showing the progress so far made in implementing the recommendations of the committee which concerned the Army. On the recommendation that a whole-time medical officer should be appointed for each establishment and that changes of such officers should be infrequent, the statement said that with the present shortage of doctors it was impossible to implement this recommendation in full now. Steps had, however, been taken to ensure that a medical officer was immediately available at each establishment if required. Medical officers were, however, attached for full-time duty at the larger detention barracks, of which Fort Darland was one. The committee also recommended that sick quarters should be provided in all establishments where they did not exist, and the statement said that "a full report on detailed requirements to implement this recommendation has been called for from the Commands concerned." Finally, the necessary improvements in night sanitary arrangements were now being carried out.

Medical Man-power

On Dec. 7 Sir RALPH GLYN asked the Minister of Health to consult the medical committees of the London general hospitals as to steps to be taken to meet the most recent requirement of doctors to join the Services. Mr. WILLINK said his medical officers would, as always, consult with, and so far as possible advise, any hospital in special difficulty with regard to medical staff. The decision to accelerate the recruitment of a certain number of recently qualified doctors holding house appointments in hospitals affected far less than half the total of doctors holding such appointments, although in individual hospitals the proportion could be as high as one-half of the house officers. The recruitment referred to should not result in depriving civilian patien's of essential treatment. Special arrangements were being made whereby the doctors would not be required to take up duty with the Forces for a few weeks. In addition, the Service Departments were prepared, on the request of Ministry of Health officers, to make the services of their medical officers available so far as possible to hospitals in urgent need of such assistance. The average number of civilians per general practitioner was rather under 3,000 over the country as a whole.

Water Supply Survey

On Dec. 7 Miss HORSBRUGH informed Mrs. Wright that it was the duty of every local sanitary authority to take such steps as were necessary from time to time to ascertain the sufficiency and wholesomeness of the water supplies in their district. The systematic long-term measurement of water resources was a matter for the Inland Water Survey, whose work consisted of recording, collating, and publishing measurements of the flow of rivers, and, in conjunction with the Geological Survey, estimates of yield of underground sources. The activities of the Inland Water Survey had been generally suspended during the war, since the central and local personnel concerned had necessarily been engaged on work more closely related to the war effort.

Reorganization of Medical Services

On Dec. 8 in the House of Lords Lord ADDISON opened a debate on the problems of reconstruction. He moved that the House welcomed the appointment of a Minister of Reconstruction—Lord Woolton—with Cabinet rank, and urged early announcement of decisions on the matters of policy affected.

When the debate was resumed on Dec. 9, Lord HORDER said that Lord Addison, in discussing the province of the Ministry over which Lord Woolton now presided, had not mentioned health services. In that matter they were back at scratch after a first start which had not been too happy. He understood for these services they had not to look primarily to the Ministry of Reconstruction but to the Ministry of Health. For the medical profession Lord Horder offered Mr. Willink the utmost help in his difficult work. He wished to correct an erroneous assumption about the attitude of doctors toward Assumption B of the Beveridge report. That assumption was that all preventive and curative medicine, knowledge, and skill would be available to every citizen. Lord Horder said he spoke for no official body of his profession, but he felt that, as a profession, doctors were anxious to assist in implementing that assumption, which had received in principle the Government's support. For Lord Woolton to suggest policy in this matter of reorganizing the medical services would be a great help. He was satisfied there would be conference and suggestion about the reorganization. To begin with the machine rather than with the man who drove the machine might be more fruitful of results. With regard to the machine, the voluntary hospitals were a large body of highly efficient, well-administered institutions. Team work was based on hospitals, not on individuals. Until there was a proper linking from the domiciliary medical service up to and including the large teaching and research centres based on a university, a large part of the doctor's time, especially of the country doctor, would continue to be absorbed in making the necessary contact to get what he knew his patient required. The body of knowledge and skill in medicine could never be made available to the citizens until the machine was improved by regionalizing hospitals. Doctors had pressed for years that dependants of the workers should be included in the National Health Insurance scheme. "Health centres" and "preventive medicine" were becoming a cliché, but they were doing nothing about positive health. Peckham, the pioneer health centre, had gone into cold storage, but what had been done at Peckham should be a national effort. By regional hospitals, by centres for dealing with positive health, and by expanding the National Health Insurance scheme to include the dependants, reorganization of medical services could be obtained more quickly and with less bitterness of heart than by saying to the doctor, "We wish you to be a civil servant." He thought the public now shared the feeling that it would not be in the public interest to convert the medical profession into a civil service. But if Parliament was going to hand voluntary hospitals and doctors to local authorities, should not something be done first to prepare local authorities for exercising these new powers and availing themselves of these new opportunities? Quite early in the conversations there had been a feeling that a spirit of partnership was not shown between those who stood for the local authorities and those who stood for the fortunes and for the efficiency of the voluntary hospitals. So the conversations broke down. Now they were back at scratch, and a great opportunity existed for

[1] See *British Medical Journal*, Dec. 11, 1943, p. 764.

the new Ministry of Health, with the suggestions and even guidance of the Ministry of Reconstruction.

Replying to the debate, Lord WOOLTON announced that the primary responsibility for housing would continue to rest with the Ministry of Health.

Influenza Epidemic

In reply to Mr. Douglas on Dec. 9 Mr. WILLINK said: Arrangements have been made with the Services for temporary deferment of the call-up of doctors. I have, in consultation with other Departments and with voluntary organizations, considered what can be done to assist, particularly in regard to medical and nursing services, special help in the home, and arrangements for meals. I am issuing a circular informing local authorities of this action and making suggestions for their guidance.

Parliamentary Medical Committee

On Dec. 9 the Parliamentary Medical Committee met at the House of Commons and elected its officers: chairman, Dr. A. B. Howitt; vice-chairmen, Prof. A. V. Hill and Major B. H. H. Neven-Spence; hon. treasurer, Sir Henry Morris-Jones; hon. secretary, Mr. Hugh N. Linstead; representative on the Central Medical War Committee, Dr. Haden Guest; representatives on the Medical Planning Commission, Dr. Haden Guest and Sir H. Morris-Jones. Sir H. Morris-Jones becomes hon. treasurer for the fourteenth year.

World Problem of Adequate Food

During the debate on reconstruction in the House of Lords on Dec. 10 Lord SOUTHWOOD said that it was conceded that in the years before the war about half the children in this country and more than a quarter of the adults were not properly fed. Since then considerable improvements had been made, but much remained to be done. United States authorities calculated that about one-third of their people lived on inadequate diets. Taking the world as a whole, 50% of the people were either underfed or badly fed. In Asia the underfed amounted to 75% of the population. The problem was a world one, and its solution must be international. He urged the Government to plan for increasing the output and reducing the price of the essential protective foodstuffs. All families should be in a position to have liberal supplies of milk, eggs, fruit, dairy produce, and other health-giving foods. The Government should include an educational campaign on food in its post-war plans. The No. 1 priority should be milk.

Surgical Staff of Central Mediterranean Forces

Sir JAMES GRIGG on Dec. 14 assured Mr. Bartle Bull that he was satisfied the surgical staff in the hospitals of the Central Mediterranean Force was sufficient to deal with the casualties, with the general qualification that owing to the universal shortage of doctors the Army could not have as many doctors as it would like. When Armies moved across the seas, as in the case of the Forces which invaded Sicily and Italy, hospitals must necessarily be closed during the voyage and until they were established on the other side. Sir James added that he was unaware that at one hospital of the C.M.F. there were only one or two surgical specialists, who were responsible for over 2,000 beds, with an average of 900 surgical cases.

Price of Insulin.—Miss HORSBRUGH, in reply to Mr. Alfred Edwards, said Mr. Willink was not aware that materials used for treatment of special diseases prescribed by doctors under the N.H.I. Act were exorbitantly priced and, in one case, rose from £1 10s. to £30 a ton. He understood that the question related particularly to pancreas glands used in making insulin. The price of these glands was now slightly less than in 1922, though considerably higher than at the outbreak of war. The price of the raw material had only a slight effect on the price of insulin itself, which had fallen very much since insulin was introduced in 1923 and was not now much higher than just before the war. Mr. Willink did not see any necessity for instituting control of such material.

Resettlement of Disabled.—The arrangements for interviewing men and women who are discharged from the Forces on medical grounds or because of disablement include interviewing at hospitals and other invaliding establishments as well as at employment exchanges. Special steps are taken, by means of reports and discussions, to get expert medical advice as to the individual's condition and as to the most suitable kind of occupation. All local offices of the Ministry have full particulars of the training and other schemes designed to assist the satisfactory resettlement of persons suffering from any form of disability, whether as the result of service with the Forces or from other causes.

Conscription for Work in Mines.—Mr. ERNEST BEVIN announced on Dec. 2 that it would be necessary to call up men for the coal mines in the same way as they were called up for the Armed Forces. A scheme for the selection of men for this purpose had been worked out. The selection would be made from men born on or after Jan. 1, 1918, placed in medical grade I, or in grade II if their disability was foot defects only. He proposed to make arrangements for special medical examination before he was sent to a training centre of any man who claimed that there were medical reasons why he was not fit for coal-mining. Arrangements would also be made for men to be medically examined again at a later stage with special reference to their fitness for underground work. So far as possible this would be done at the training centre before they were finally posted to a colliery.

Notes in Brief

Proposals for providing additional beds for tuberculosis cases in Liverpool by an extension of one of the corporation's hospitals have been approved in principle by the Minister of Health. Plans for the extension are under immediate consideration.

Facilities for mass radiography are to be made available in Yorkshire so far as is at present practicable in view of wartime limitations on the manufacture of apparatus required for this system. One unit is being sent to Leeds almost immediately, and another is to go to Sheffield within the next few months.

The increases in the number of men over 65 during each of the past two years have been estimated at about 50,000 and 60,000 respectively. This represents an average increase of about 3½% per annum. Comparable figures for women over 60 are about 93,000 and 102,000, and 2.9%, respectively.

Medical News

The American Pharmaceutical Manufacturers' Association has made its Award of Distinction for the year 1943 to Prof. Alexander Fleming for his discovery of penicillin and to Prof. H. W. Florey for his study of penicillin as a therapeutic agent.

At a meeting of the Clinical Society of the Royal Eye Hospital to be held at the hospital on Friday, Jan. 14, at 4.30 p.m., a talk will be given by Mr. Frederick Ridley on "The Tears."

Wing Commander Kenneth Robson will give the Goulstonian Lectures before the Royal College of Physicians of London on Jan. 13, 18, and 20, at 2.30 p.m. at the College, Pall Mall East. His subject is primary pleurisy with effusion.

Dr. T. Simpson Crawford, medical officer of the Wellshot Road first-aid post, Glasgow, has arranged a series of popular lectures for the present winter and until next June with the object, he says, of preventing boredom. The syllabus is evidence of the time and thought he has given to the choice of both subjects and lecturers. There are, of course, lectures on certain aspects of aerial warfare, but other subjects include plastic surgery (Mr. T. Gibson), brain surgery (Mr. J. Sloan Robertson), anaesthesia (Dr. Alex Forrester), fracture and rehabilitation clinics (Mr. James Patrick), immunity (Dr. A. Miller), sick children (Dr. Finlay Ford).

Medical officers of health are asked to supply the Ministry (on Form T.147) with the necessary particulars of all male persons born in the year 1926 who have a history of tuberculosis.

The Ministry of Health and the Department of Health for Scotland announce that in view of the influenza epidemic the Ministry of Labour and National Service has agreed to a temporary suspension of the call-up of pharmacists and dispensers to the Services. This will apply to those pharmacists and dispensers to whom an enlistment notice has not already been issued.

The Pharmaceutical Society of Great Britain announces the arrival in this country from North Africa of a cargo of red squill for killing rats. Other shipments are said to be following the first. Our annotation "War on the Brown Rat," published last week at p. 786, said that red squill was the most effective poison but was difficult to obtain now in large enough quantities.

With the co-operation of the Colonial Office and of the Malta Government office in London, the British Medical Students' Association has dispatched to Malta eight cases of medical books for the use of medical students. The books were collected as a result of an appeal issued in the medical and lay press by the B.M.S.A. The appeal was made as a result of a letter from the vice-president of the Students' Representative Council at the University of Valetta. The Association has received the thanks of the Secretary of State for the Colonies for its help to the medical students of Malta.

Dr. F. Y. McKendrick, Sutherland, has been commended for brave conduct when an aircraft crashed and caught fire.

Dr. M. M. Walker, resident medical officer at the Winchester Emergency Hospital, has been appointed to the Colonial Medical Service as assistant medical officer in the Kingston Public Hospital, Jamaica.

Dr. Edward A. Strecker has been appointed special consultant to the Secretary of War for the Air Forces of the United States Army.

The Pharmaceutical Society of Great Britain has completed arrangements for sending from London a representative collection of 49 volumes to form the nucleus of a pharmaceutical library for the Pharmaceutical Society of China, which, since last year, has had its headquarters at Hsinchiao, Chungking.

The Spanish Cultural Institute at Buenos Aires has recently dedicated a histological laboratory to the memory of Ramon y Cajal under the direction of Prof. Hortega, one of his pupils.

Dr. Eugenio A. Galli has been appointed president of the National Department of Hygiene of Argentina.

The Ophthalmological Society of Egypt (42, Kasr El Ainy Street, Cairo) has drawn up regulations for the award of a gold medal for the most valuable contribution brought up before its annual congress.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* the prevalence of the various infectious diseases changed considerably during the week. Only pneumonia and influenza showed rises in incidence, notifications of the former mounting by 644 cases, and deaths due to influenza increasing by 334 cases to a total of 709. Influenza deaths for the week ending Dec. 11 totalled 1,148. Falls were recorded for scarlet fever, by 463, diphtheria by 122, measles by 67, and whooping-cough by 43.

Influenza.—The largest rises in influenza mortality were those of London from 29 to 72 deaths, and Birmingham from 20 to 57. In Manchester 47 deaths were registered, an increase of 3. The largest totals in the remaining towns were Leicester 19, Liverpool 18, Rochdale 18, Nottingham 17. The greatest rises in the notifications of pneumonia were those of London 83, Middlesex 66, Lancashire 59, Yorks West Riding 58, Essex 56.

Notifications of scarlet fever fell in Middlesex by 80, Lancashire by 68, Yorks West Riding by 54, and in Essex by 36. The decline in diphtheria was fairly general: three counties—Lancashire, Yorks West Riding, and Durham—accounted for 37% of the total notifications. The chief local variations in the incidence of whooping-cough were declines in Yorks West Riding by 56, and London by 30, and an increase in Staffordshire of 30. In contrast to the general trend, the only variation of any size was an increase of 26 cases of measles in Cambridgeshire; they all occurred in Newmarket R.D.

There were 3 fewer notifications of dysentery than in the preceding week. There were no fresh outbreaks of any size, but increases were recorded in existing outbreaks. In Yorks West Riding, Harrogate M.B., the cases rose from 2 to 14, and in Caernarvon, Conway M.B., from 1 to 15. The other principal centres of infection were London 31, Kent 12, Middlesex 10.

In *Scotland* there were rises in the notifications of acute primary pneumonia 87, and of dysentery 14. Decreases were recorded for scarlet fever 72, diphtheria 27, whooping-cough 20, and cerebrospinal fever 9.

In *Eire* an outbreak of measles in Kilkenny, Thomastown R.D. 20 cases, was responsible for the increase in this disease.

Quarterly Returns for Eire

During the September quarter the number of births were equivalent to a rate of 22.4 per 1,000 of the population, this rate being 1.5 below that for the third quarter of 1942 but above the rate for the September quarters of the preceding years. Infant mortality was 71 per 1,000 registered births, the highest figure for this quarter during recent years, and was 14 more than the rate for the third quarter of 1942. The general death rate, 12.2 per 1,000, was also the highest for recent September quarters; during 1938–42 the rate varied between 11.4 and 11.7. 551 deaths were attributed to the principal infectious diseases, compared with an average of 344 for the third quarters of 1938–42. The principal causes of deaths from infectious diseases were infantile diarrhoea and enteritis 385, whooping-cough 74, diphtheria 72, the average for the five preceding third quarters being 224, 43, and 44 respectively. Deaths from pulmonary tuberculosis numbered 739 and from other causes 172, compared with 804 and 154 in the September quarter of 1942 and 651 and 166 for the average of the third quarters of 1938–42.

The Week Ending December 11

The returns of infectious diseases in England and Wales during the week included: scarlet fever 2,564, whooping-cough 1,641, diphtheria 634, measles 444, acute pneumonia 2,956, cerebrospinal fever 77, dysentery 166, paratyphoid 2, typhoid 5. The deaths attributed to influenza in the great towns rose by 439 to 1,148.

No. 48

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Dec. 4.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1943 (a)	(b)	(c)	(d)	(e)	1942 (Corresponding Week) (a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	60	5	21	—	2	73	9	19	2	9
Deaths		1	2				1	—		
Diphtheria	610	29	161	101	50	1,011	42	234	84	33
Deaths	21	1	3	2	1	22	2	3	6	—
Dysentery	144	31	58	—	—	191	14	52	—	—
Deaths				—	—				—	—
Encephalitis lethargica, acute	3	—	2	—	—	3	—	2	—	—
Deaths		1					1			
Erysipelas			56	8	2			60	10	3
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years				26					51	
Deaths	46	5	8	11	5	58	8	10	13	3
Measles	451	32	66	49	1	11,205	415	523	31	27
Deaths	1	—	—	—	—	15	1	2	1	—
Ophthalmia neonatorum	52	2	16	—	—	73	2	20	1	—
Deaths										
Paratyphoid fever	2	—	2	—		5	—	2	—	
Deaths	—	—	—		—	—	—	—		—
Pneumonia, influenzal*	2,291	204	84	5	6	890	77	6	2	3
Deaths (from influenza)	709	72	50	4	3	33	6	1	—	—
Pneumonia, primary			413	28				185	30	
Deaths		161		12	15		—		11	11
Polio-encephalitis, acute	1	—				—	—			
Deaths		—					—			
Poliomyelitis, acute	4	—	—	2	—	11	1	—	18	—
Deaths		—					—			
Puerperal fever		2	10		—		1	18		—
Deaths		—					—			
Puerperal pyrexia†	136	7	18	—	—	145	7	14	1	—
Deaths										
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	2,694	219	330	27	104	2,900	146	378	75	69
Deaths	5	1	—	—	—	3	—	1	—	—
Smallpox	—	—	—		—	—	—	2		—
Deaths			—	—	—			—	—	—
Typhoid fever	8	—	2	7	—	4	1	2	6	—
Deaths	1	—	—	1	1	2	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough	1,757	133	205	26	30	1,195	60	38	79	9
Deaths	16	2	1	2	—	8	—	—	2	1
Deaths (0–1 year)	425	54	83	40	28	353	48	70	41	18
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	8,081	1,352	860	246	153	4,816	742	662	226	116
Annual death rate (per 1,000 persons living)			19·4	16·2	‡			14·9	15·1	‡
Live births	5,731	663	838	369	223	5,767	691	822	365	246
Annual rate per 1,000 persons living			17·1	24·3	‡			17·0	24·4	‡
Stillbirths	169	23				221	21	28		
Rate per 1,000 total births (including stillborn)								33		

* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Includes puerperal fever for England and Wales and Eire.

‡ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1.

ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

Authors desiring REPRINTS should communicate with the Secretary of the Journal Board, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

ADVERTISEMENTS should be addressed to the Advertisement Manager (hours 9 a.m. to 5 p.m.). Members' subscriptions should be sent to the Secretary of the Association.

TELEPHONE NO.—B.M.A. and *B.M.J.*: EUSTON 2111.

TELEGRAPHIC ADDRESSES.—EDITOR, *Aitiology Westcent, London*; SECRETARY, *Medisecra Westcent, London*. ADVERTISEMENTS, *Articulate Westcent, London*.

B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

ANY QUESTIONS?

Serum Sickness from A.T.S.

Q.—*A boy aged 5½ cut his foot badly while digging in the garden and was therefore given 2 c.cm. of tetanus antitoxin. Conjunctival irritation and lid oedema in one eye developed within half an hour of the injection, and four or five days later there was a sharp attack of serum sickness. Presumably the immediate reaction was due to immunization against diphtheria four years before, when I believe toxoid-antitoxin floccules were used. What will be the risks if serum has to be given again and how could they be forestalled? Would anything be gained by active immunization against tetanus?*

A.—What type of tetanus antitoxin was used? Broadly speaking, there are three types of antitoxin: (*a*) Unaltered blood serum of horses immunized against tetanus. This was in common use many years ago; perhaps three-quarters of the patients receiving this suffered from some form of reaction, "serum sickness." (*b*) "Concentrated antitoxin." About 30 years ago it was discovered that by the use of salt—mostly ammonium sulphate—one could remove much of the protein of serum without any great loss of antitoxin, and so "concentrate" the antitoxin. By its use the incidence of serum sickness was reduced to perhaps 20 to 40%. (*c*) Enzyme-treated antitoxic serum. About eight years ago Pope in this country and Parfentjev in the U.S.A. described in medical journals methods of "protein disaggregation" or partial digestion. By treatment with ferments such as pepsin these authors could get rid of further relatively useless protein, and alter the antitoxin-containing protein. The incidence of reaction and serum sickness caused by this antitoxin is very low, perhaps 1 to 4%. Teachers in large fever hospitals often find it difficult now to discover in their wards a single case of "good serum rash" for demonstration.

Natural antitoxic serum (*a*) is now of honoured historic interest. Antitoxin *b*, owing to early war excess demand, is probably still in circulation. Antitoxin *c* has no readily recognizable common name. Probably "enzyme-treated" would be the best designation; but titles like "refined," which was at one time applied to *b*, are in use. Though *c* is not entirely devoid of the ability to "sensitize" a patient, its liability to do so is so low, and the volume containing the prophylactic dose is so small, that its use, but for war emergencies, would have become almost universal; if the doctor feels compelled ever again to give this boy serum of any kind, he would be wise to use enzyme-treated antitoxin.

What would be the risk if serum has to be given again? Obviously no dogmatic statements can be made or rigid rules stated. The figure often quoted for anaphylactic death after serum is about 1 in 300,000 (though probably most serum manufacturers would from their records believe that the incidence is much lower and that the figure should be in the millions). In some of these fatal cases there had been a previous history of reaction after serum, but there does not seem to be any large collection of figures showing the risk of recurrence of undesirable or dangerous serum reaction. Most physicians would be chary of giving antitoxin a second time to a patient with this history. If it became unavoidable, probably the wisest course would be to inject intramuscularly a small amount of serum—e.g., 0.1 c.cm.—and wait a short time, perhaps an hour. If no trouble occurred the main amount of serum could then be given. It should never be forgotten that adrenaline should be instantly available whenever serum is being injected. Would active immunization against tetanus be an advantage? The evidence strongly suggests that active immunization gives a high degree of protection, though this may not be adequate in all circumstances. The risk of tetanus in peacetime civil life in England is so small that it is doubtful if ever a great demand for immunization will arise, though a recent American writer speaks of the increasing civil demand there.

If the boy is not Schick-negative, prudence would insist that he be immediately immunized against diphtheria with A.P.T. (not T.A.M. or T.A.F.) and tested later to ensure that he is Schick-negative. Also, a "reinforcing" dose of A.P.T. two or three years later would be wise. If permanently Schick-negative, the boy should never need diphtheria antitoxin.

Q.—*As a country doctor I meet with numerous wounds, large and small, which may be infected with tetanus. I give a prophylactic dose of serum where I have any fears in the matter. Naturally the same patients turn up after an interval with some new damage sustained on the farm, and perhaps need to have another prophylactic dose of A.T.S. well after the period has elapsed for sensitization to take place. One patient who had such treatment recently developed a very severe rash, with itching, shivering, and malaise, one week later, for two days. She had had two prophylactic injections earlier in life, at very long intervals. What danger exists of anaphylaxis in such cases, more especially in those who have had more than one previous injection? Can illness arising after one week ever be dangerous, and can it be prevented?*

A.—The problem described allows of no completely satisfactory solution. It is conceivable that danger may arise even after the exclusive use of enzyme-treated serum, but experience suggests that it is rare. Even with the old-fashioned salt-concentrated antitoxin, the risk of dangerous reaction and anaphylactic symptoms or recurrence must have been very small. The present writer (though he cannot trace the record in what the war has left of his papers) once knew of a large hospital in the U.S.A. which, after several cases of diphtheria among the nursing staff, made a practice of injecting monthly prophylactic diphtheria antitoxin into all its nurses. Though these repeated injections went on for a long time, probably until the discovery of active immunization, there had been no serious or fatal cases of anaphylaxis at the time the data became available.

Orchitis of Mumps

Q.—*If there is substance for the assertion that the contracting of mumps in adult life impairs fertility, what measures, if any, can be taken with regard to this in the direction of immunity either from incurring mumps or from such a result?*

A.—Orchitis is the commonest complication of mumps and occurs in 15 to 30% of affected young adults, among whom the infection commonly occurs in epidemic form during wars. As a rule only one testis is affected, but even when both are involved loss of fertility due to testicular atrophy need not follow. Though ordinarily the infectivity of mumps is low, the abnormal conditions in the Services make it almost impossible for the young adult to avoid exposure during an outbreak. In civilian life the young father should avoid intimate contact with his infected family. Infection is by direct droplet spread during the early stage of the disease. Convalescent serum, used as in measles, has given inconstant results.

Any male adult who becomes infected should immediately go to bed and rest for 10 to 14 days in order to lessen the risk of complications. If orchitis develops, usually in convalescence but sometimes earlier or even as the first symptom, the scrotum is supported with a suspensory bandage, and cold compresses, glycerin of belladonna or lead and opium fomentations, are applied. If the swelling is very pronounced or if both testes are involved, multiple puncture of the tunica albuginea may be done to relieve tension and thus avoid subsequent testicular atrophy. Indeed, for such cases Wesselhoeft and Vose (*New Engl. J. Med.*, 1942, **287**, 217) recommend exposure of the swollen organ and incision of the tunica albuginea. This gives immediate relief and is followed by a rapid fall of temperature. Operation should be done early before the inflammation has reached its height, but is recommended only for the severe fulminating case.

Oestradiol Benzoate for Dysmenorrhoea

Q.—*I have come across lately several references to oestradiol benzoate as a cure for sterility and dysmenorrhoea and I would be grateful for advice on the following points. I have a patient, aged 24, otherwise healthy, with a most intense dysmenorrhoea which practically incapacitates her on the first day of each menstrual period. The dysmenorrhoea is, I think, due to an under-developed uterus. Analgesics only relieve symptoms. (1) Would I be justified in trying a course of oestradiol benzoate? (2) If so, in what dosage and for what period? (3) What effect has it on the uterine musculature? (4) What effect would it have on the secondary sexual characteristics—breasts, distribution of hair, girdle fat, clitoris, libido, etc.?*

A.—Oestradiol benzoate is occasionally useful in the treatment of spasmodic dysmenorrhoea and sterility, but only when these symptoms are due to definite uterine hypoplasia. Its effect on the uterus is to cause increased vascularity and hypertrophy of both myometrium and endometrium. It promotes spontaneous rhythmical contractions of the muscle and increases its sensitivity to other stimuli. Suitable dosage would be 5 mg. intramuscularly every 3 days for 5 doses commencing after a menstrual period. No injections should be given during the 10 days preceding menstruation, but during this time progesterone may be usefully employed as an

adjunct. Three courses of treatment over three successive cycles should be given in all. On the whole, however, the results of oestrogen therapy for dysmenorrhoea are disappointing. The effect of oestradiol benzoate on the secondary sex characters is a stimulating one. The breasts may temporarily increase in size and sensitivity, and sometimes the areolae become pigmented as in pregnancy. Sexual feeling and the clitoris, however, are not likely to be affected. The distribution of hair and the figure remain feminine, but the amount of pubic hair, if previously scanty, may be increased.

Recurrent Ulcerative Stomatitis

Q.—*A patient aged 24 suffers from recurrent ulcers of the mouth. Duration 3 months. He was treated in hospital: (1) locally, chromic acid 5% and hydrogen peroxide, also arsenical paints; (2) generally, nicotinic acid and ascorbic acid; (3) teeth were x-rayed and two infected wisdoms were extracted. He was discharged from hospital 3 weeks ago with a letter that said these ulcers were incurable and would return from time to time. One ulcer developed 7 days ago. Is there anything more I can do?*

A.—Ulcerative gingivo-stomatitis, or "trench mouth," must be distinguished from recurrent aphthous or vesicular stomatitis which goes on to the formation of ulcers or "canker sores." Trench mouth commonly begins in an area of stagnation in the gums, whence it spreads by direct continuity. It is often associated with oral sepsis, and can usually be cleared up by scaling the teeth, removing areas of stagnation, and applying zinc peroxide or chromic acid and hydrogen peroxide locally. The value of intravenous arsenicals is still debated. The aphthous type of stomatitis commonly begins with a crop of small infiltrating aphthae or vesicles, 1 to 2 mm. in diameter, usually surrounded by an intensely red areola. It affects the cheeks, tongue, and pharynx, and the onset is often associated with headache, malaise, and a variable amount of fever and sore throat. The lesions break down and form shallow ulcers which may occasionally by coalescence attain a large size. They may be exquisitely painful. The attacks may rarely be accompanied by simultaneous ulceration of the perianal region and vulva. The aetiology of the disease is unknown, but a herpetic origin is favoured. Cases are sometimes associated with anaemia or agranulocytosis, and may then cease to recur on improvement in the primary disorder. In other cases there is a familial predisposition to the disease. Women seem to be affected more than men, and the recurring attacks may coincide with menstruation. In the past the condition has been extremely intractable, and little but disappointment has come from treatment by removal of foci of sepsis, the use of vitamins, anti-allergic measures and desensitization by protein inoculations or vaccines, attention to the digestion, etc. Local treatment should be carried out with mouth-washes of potassium chlorate (10 gr. to the ounce) or sodium sulphite (1 drachm to the ounce), painting the ulcers with equal parts tincture of myrrh and glycerin of borax, touching them with resorcin 2% in spirit or silver nitrate, or dusting them with benzocaine or chloretone and boric acid (boro-chloretone). Very recently, however, Grace (*Arch. Derm. Syph.*, Chicago, 1943, **48**, 151) has reported improvement from repeated inoculations of smallpox vaccine. This was given on the assumption that the disease is caused by a virus akin to herpes simplex, which is frequently controlled by the same treatment. The first four or five injections were given at intervals of a fortnight and then the interval was increased to a month; the dose was not stated.

"Spots" in Children

Q.—*Many mothers believe that "spots" in children are due to eating fruits, especially apples. Some doctors believe and say the same to mothers. Is there any truth in this belief? If so, how can we explain the absence of such skin trouble in countries where fruit is eaten in enormous amounts?*

A.—Many articles of diet, including fruit, are capable of producing "spots" in children, and this reaction has been observed in every country. It should, however, be pointed out that, contrary to popular opinion, food allergy is distinctly uncommon, and that the spots may be due to other causes, such as the itch mite, a common source of error at the present time.

Recurrent Styes

Q.—*Can you suggest treatment for a girl of 17 who has been suffering from recurrent styes in both eyes for about a year? She is otherwise very healthy. All the usual remedies have been tried, including argyrol 5%, and albucid, but without avail.*

A.—There are two kinds of stye—external and internal. The external stye is a suppurative inflammation of one of Zeiss's glands. It begins as a small painful swelling on the outer aspect of the eyelid; pus develops, and this small abscess points near the attachment of one of the cilia. The infection is staphylococcal, and recurrence may be due to persistence of the staphylococcus on the eyelid or on the hands. An antiseptic cream—e.g., containing 5% sulphathiazole—should therefore be applied morning and night to the eyelids and hands for some time after the stye has healed. Sometimes an autogenous vaccine containing in addition staphylococcus toxoid will prevent recurrence, but the foregoing measures to prevent reinfection must not be neglected during vaccine therapy. The internal stye is an infection of a meibomian gland—sometimes called a meibomian or tarsal cyst—and is intensely painful because of the unyielding fibrous capsule. Recurrences are usually in the same site and can only be prevented if the cyst is removed by an ophthalmic surgeon.

INCOME TAX

Official Quarters in Hospital

H. H. has received a demand note for tax on the estimated value of the official quarters he recently had in a hospital. Is this income liable?

*** The exemption of hospital premises to income tax under Schedule A does not extend to the value of such portions as are occupied by an individual officer whose total income amounts to £150 or more. This is an old statutory rule and operates not so much by authorizing a charge on the officer himself but rather by leaving liable a portion of tax which would normally be collected from the hospital authority. The tax is due to the Revenue; whether it should be paid by the hospital or the individual officer is a matter for settlement between them. (The entry of the amount due as "land tax" in the demand note is clearly a clerical error.)

Commission for Appointment

C. D. inquires whether commission paid by him for obtaining his present employment as an assistant can be deducted for income-tax purposes.

*** No. The payment is not an expense incurred wholly, exclusively, and necessarily *in* performing the duties of his employment; it is in fact incurred anterior to and in order to obtain that employment. (Such expenses are usually allowed in the case of a medical man holding a series of engagements as a locumtenent, the employment being regarded as continuous over a period notwithstanding the changes in locality and principal.)

Cost of Maid o' Work in a Practice

"X. X." now keeps only one maid as the other is working on munitions. When he kept two maids he was allowed the cost of one. What should be allowed now?

*** The only test likely to satisfy the income-tax inspector or the Commissioners, if the point is taken to appeal, is in what proportion is the maid's working time divided between work on the professional and private sides. As when two maids were kept it was accepted that a fair division was half and half the same ratio will probably be insisted upon now unless "X. X." can show that the maid still retained spends more time on the professional than on the private side.

Fees received from Medical Board

A. M. is not on any Medical Board but sees cases in a consultant capacity. The local inspector of taxes claims to assess the fees under Schedule E.

*** On the face of it there seems to be no reason why the ordinary procedure should not be followed, and the fees accordingly treated as part of the gross income of the practice and included in the Schedule D assessment. If the inspector will not agree, and does not furnish specific reasons for not agreeing, we suggest that A. M. might write to the Board of Inland Revenue, Imperial Hotel, Llandudno, explaining the facts. (On a strict legal basis, the Schedule E assessment may be correct; although not *on* a Medical Board, A. M. may hold an appointment—i.e., an office of profit—as consultant to one or more such Boards.)

Break in Work owing to Illness

"PATER'S" son qualified in 1940 and was employed in a hospital until January, 1941. Owing to illness he was unemployed until January, 1943, when he started work as an assistant at £25 a month. How should his liability be calculated for the year ending April 5, 1944.

*** The "employment" in respect of which liability arises for 1943-4 is his present employment, and should be calculated at the amount of his earnings for the current year—i.e., for the year to April 5, 1944.

Subscriptions

"UPSILON" asks whether he can deduct (*a*) commission paid to a medical agency for introducing him as an assistant, and (*b*) subscriptions to the B.M.A. and a medical protection society.

*** (*a*) No; such expenses are incurred prior to and not in the course of the employment. (*b*) Yes—assuming that membership of these associations is required as a condition of the employment.

LETTERS, NOTES, ETC.

Postural Dizziness

Dr. H. MACNAUGHTON-JONES (Amersham) writes: One of your correspondents complained that his wife suffered from giddiness when turning in bed and on rising and there was no explanation (Oct. 9, p. 471). It is clearly not due to rotatory movement of fluid in the head, since rotation in a vertical position, which is often more rapid and more extensive, does not produce it. I venture to put forward an explanation of both forms of giddiness. In my little work *Hearing and Equilibrium* I pointed out that the saccus endolymphaticus is situated midway between the front and back of the cranium and also between the centre of rotation and the perimeter; consequently, during rotation of the head or movement backwards or forwards the pressure in this region remains constant. During rotation centrifugal force produces an increased pressure on the walls of the cranium and a corresponding reduction at the centre, but at a point midway between it remains substantially unchanged, the only change being due to the entrance of fluid from the spinal canal. In any movement of the head backwards or forwards the inertia of the intracranial contents produces an increased pressure on the inner aspect of the cranium at one end and a decrease on the opposed aspect, while that over the saccus again remains constant. Rotation of the head, therefore, produces rotation of the fluid in the semicircular canals without creating a differentiation of pressure over the sacci. On the other hand, turning a corner on a motor-cycle, a cycle, or on foot may involve a movement of the head only equivalent to that involved in looking over the shoulder, and yet may produce a violent disturbance of equilibrium which requires correction. Any such movement causes a difference in pressure over the two sacci, and its automatic correction establishes equilibrium. A slight stenosis or obstruction of the duct leading from one of the sacci to the corresponding saccule in the vestibule would produce the symptoms. On assuming the upright position the change in pressure within the cranium would be conveyed more rapidly from the saccus to the vestibule on one side than on the other with perversion of the mechanism of equilibrium. The correct changes in the vestibules would also not take place if the head were turned while in the horizontal position. A good test is to get the patient to bend well forward with the head between the legs for a few seconds and then suddenly sit upright; there will be intense giddiness without any feeling of faintness or change of colour, and the patient may approach the observer and turn with the utmost rapidity without any giddiness. Looking upwards also is frequently accompanied by rotation of the head about an oblique axis.

Menopausal Flushes

Dr. C. H. FOLEY (Athenry, Co. Galway) writes: Some years ago I read a book by an American general practitioner of Scotch extraction on his experiences of 55 years' practice in rural America. In it he so lauded the treatment (his own) of the conditions of the menopause and climacteric that I decided to try it—pil. lapactic (Sharp and Dohme, London). It contains only aloin 1/4 gr., strychnine 1/80 gr., ext. belladonna 1/8 gr., powdered ipecac. 1/16 gr. It surpassed all my expectations. I knew it previously as a simple laxative pill only. I found it so eminently satisfactory that I confined my treatment to it alone, one pill three times a day. It tides the patient over the symptoms—depression, flushing.

Ante-natal Care

Dr. H. S. RUSSELL (Bradford) writes: On reading Dr. A. J. Partridge's account (Sept. 11, p. 329) of fatal air embolism in a pregnant woman near term, I was very much surprised to find that apparently no attempt was made to deliver the child by post-mortem Caesarean section. Opportunities to perform this simple little operation are fortunately rare, but should be grasped, as it is seldom that a life can be saved so readily. Ante-natal care should consider the child as well as the mother, and should save him from drowning in liquor amnii.

Research in Senile Diseases

Mr. SYDNEY TIBBLES (London, W.1) writes: In reply to Dr. Trevor Howell (Sept. 4, p. 314) the Williams and Wilkins Company of Baltimore, Ohio, have recently published a second edition of Cowdey's *Problems of Ageing*; the preface to the first edition calls it "a logical development of the problem of arteriosclerosis." Having recently consulted it on obscure senile retinal changes, I found it to be a regular encyclopaedia on tissue changes and modifications of function in every part of the body. There is a similar work, *Internal Medicine in Old Age*, by Mueller-Dehan and Rabson, published by the same firm, and both are obtainable through Lewis of Gower Street. The 900-odd pages, with the numerous references in the first-mentioned work, should be of the utmost interest to your correspondent.

Treatment of Tapeworm

Dr. C. HOBART HOUGHTON (Malvern, Natal) writes: Referring to the answer on the treatment of tapeworm (July 31, p. 157), I suggest that your inquirer try the treatment advocated by Manson for ankylostomiasis (Manson's *Tropical Diseases*, 11th edition, p. 817), consisting of chloroform, min. 45; ol. eucalypt. min. 30; ol. ricini ad ʒ 10–14—given half in the early morning, the rest half an hour later. No special dieting is necessary, and the treatment is less disagreeable than male fern.

Chicken-pox following Contact with Shingles

Dr. A. GREENWOOD (Godmanchester) writes: I think that we all come across instances of this puzzling association. The following is, however, an unusual instance, I believe. On Jan. 11, 1943, a girl of 12 developed a typical herpes zoster affecting the right loin and groin. On Jan. 23 her brother, aged 2, developed typical chicken-pox. I then re-examined the sister to see whether any vesicles elsewhere had escaped my notice originally, but could find no others, only the fading and absolutely typical shingles lesions. This girl was said to have had chicken-pox years ago. I do not recall any other case of shingles below adult age. Can it be that herpes is a modified form of chicken-pox in an individual who has previously had the latter?

Destruction of Schistosome Larvae

Dr. F. G. CAWSTON writes from Durban: For destroying the fragile schistosome larvae there is no more practical remedy than forced disturbance of the water under pressure, as by a ram, but cart-loads of soil, thrown over rushes on river banks in a dry season, destroy not only species of *Limnaea*, which depend on light and convey fluke infection of stock, but large numbers of the sinistral-shelled hosts for human parasites. The method deserves to be more extensively employed on farms and vleis in affected areas.

Fleas and Cockroaches

Dr. H. S. ANDERSON (Parkstone, Dorset) writes, in connexion with answers given on flea and cockroach pests on Oct. 9 (p. 472) and Oct. 16 (p. 502): The following hints culled from various sources, probably more than 40 years ago, have proved very useful to me on many occasions both at home and abroad. (1) Fleas breed in dry dust; they will not remain in any room where the junction of skirting-board and floor has been wiped with a trace of kerosene on a cloth, and the room is subsequently regularly kept clean with duster and waxed floor-mop; they never bite a greasy skin. Towards the end of the eighteenth century the Knights Hospitallers of St. John stayed an epidemic of plague in Valetta by prophylactic oiling of the skin against fleas. (2) Cockroaches are only killed quickly by pulv. ac. boric. when it is perfectly dry. Derris is no better in this respect. For damp conditions, fresh cucumber peel scattered in small pieces on kitchen floor or basement steps at night always attracts *Blatta* with deadly effect; specimens will be ready for next morning's dustpan.

Colour Film of Air-raid Casualties

This colour film, which was noticed in these columns on July 18, 1942 (p. 88), and which was made during some of the worst days of the "blitz," has consistently attracted large audiences of those "technically interested," many thousands of whom have profited by its instructive details. Gatherings of Civil Defence workers, Canadian and American Red Cross units, Czech doctors, and many others have expressed their appreciation of the excellence of the running commentary, the photography, and the portraiture of wounds, burns, etc., and of the fine team work exemplified in the treatment of casualties. The film is still available and can be shown under certain conditions, details of which may be obtained from the manager, Mr. Magrill, 17, St. Quintin Avenue, London, W.10.

Back Numbers Wanted

Some weeks ago we printed an appeal to members who do not preserve the *Journal* for binding to send their copies (preferably in bulk) to B.M.A. House, Tavistock Square, W.C.1, addressed to the Secretary of the Journal Board, who will repay the cost of carriage. Some members who intend to act upon this invitation may be waiting until they have accumulated a substantial pile of recent *Journals*, and if so they need no reminder. There is a constant demand for back numbers from libraries, medical institutions, and other sources at home and abroad, and each issue goes quickly out of print; hence any spare copies published during the war will be welcome, both for present purposes and to set aside for the reconstruction of medical and scientific libraries in countries now overrun by the enemy. A member who returns his *Journals* at any time after reading them will by so doing put them back into circulation through the Head Office for the benefit of others, including the newly qualified who are joining the Association in large numbers.

BRITISH MEDICAL BUREAU

TAVISTOCK HOUSE SOUTH,
TAVISTOCK SQUARE, W.C.1.
Telegrams: Triform, Westcent, London.
Telephone: Euston 1644 and 1645.

All Branches of Medical Accountancy undertaken

1. W. SUFFOLK.—Agricultural area. Receipts 1942 £2,895. Panel 1,660. Good house for sale. Premium one year.
2. SOMERSET.—Country Practice over £1,000 p.a. Good house for sale. Scope. Premium £1,200.
3. SURREY.—Residential district. Receipts about £1,400. Small attractive house to rent.
4. SUFFOLK.—Country. Receipts about £2,700. Panel about 1,400. Nice house for sale.
5. DEATH VACANCY.—London, S.E. 14. Receipts over £2,000 (panel and appt. about £1,550). Rent £65.
6. W. of ENGLAND CITY.—Receipts over £5,000. Two-fifths or one-half share at 1½ years. Choice of house.
7. S.W. OF ENGLAND.—Partnership. Country town. Receipts 1943 £4,750. Premium quarter share £2,300, including £500 share in property.
8. LINCS.—Country Practice, over £1,000. Panel 680. Premium £1,250.
9. DEVON.—Market town. Receipts over £7,000. Panel 2,581. Three-sevenths share £3,500
10. DEATH VACANCY.—Somerset. Surgical Practice of £3,200.
11. HOME COUNTY.—RADIOLOGICAL PRACTICE in good Town. Receipts 1942, nearly £2,500.
12. WESTERN CITY.—Outskirts. Receipts 1942 £1,312. Panel 1,450. House sale or rent.
13. DEATH VACANCY. LONDON, S.E.5.—Receipts 1942 £1,200. No Panel. Corner house.
14. LANCS.—Town close Yorks border. Receipts 1942 about £1,800. Panel 1,600. Modern house with good garden for sale.
15. S. WALES.—Panel and Contract about £1,250 p.a. Premium £2,000 to include house
16. MARKET TOWN about 50 miles N. of London. Receipts about £1,500. Panel 930. Very attractive house to rent.
17. BERKS.—Country. Receipts about £780 (£600 from panel). Small house, sale or rent. Scope.
18. DEATH VACANCY.—London, N.W.11. Receipts 1943 to October about £545 (£364 panel).
19. SOUTH COAST.—Half-share (about £1,900 p.a.) in increasing Practice. Panel 3,000. Modern detached house. Premium 1½ years.
20. DERBYSHIRE.—Outskirts of town. Receipts £2,000. Nice house. Premium by instals.

Scottish Branch, 21, Alva Street, Edinburgh. 2
Manager, G. RUSSELL. Phone Edin 23969

PERCIVAL TURNER, LTD.

MEDICAL AGENCY (Est. 60 Years).
25, MAIDEN LANE, STRAND, W.C.2.
'Phone: TEMple Bar 9011.
Night: Walton-on-Thames 1785.

SOMERSET. Over £1,000 p.a., panel 765, appts. £235, good house and surg.—S. WALES, D.V., £1,900 p.a., panel 1,545, prem. £1,500, terms, house to let or buy.—E. YORKS. Share over £4,000 p.a., fine house and grounds, rent or buy.—KENT Suburb, abt. £900, panel 800, small house to rent.—LONDON, S.E. Death vacancy, £2,000, panel and appt. £1,500, rent £65 p.a.—YORKS. £3,500 p.a., panel 3,200, appts. £200. Premium 1½ years' purchase.—LANCS. £1,800 p.a., panel 1,600, appt. £180, premium £2,250, good house and surg.—KENT TOWN. Assistancy with view to purchase, panel 2,200, appt. £150 and private.—LONDON, W.1. Good-class, about £1,200 p.a.—S. WALES. Over £2,000, panel 1,800, appts. £600, prem. £1,500.—MIDLANDS. Rural, £1,600, panel 950, appts. £75. Ex. house and garden.
Many others. Ask for list.

ASSISTANTS AND LOCUMS REQUIRED.

BRITISH MEDICAL BUREAU

Northern Branch: 33, Cross St., Manchester, 2.
Tel.: Blackfriars 3925; after office hours Rusholme 2549. Tel.: "Locum, Manchester."

NEWCASTLE-UPON-TYNE, practice or partner or assistant view succession. Over £3,500. Panel 3,500.—LANCS TOWN, £1,600. Panel 1,600. Modern house.—N.W. LANCS, country. Over £2,200. Panel 1,000. Good house.—MANCHESTER—PARTNERSHIP, 2/5ths share of £4,700. Panel 3,500. Many others.

LOCUMS AND ASSISTANTS REQUIRED.

LEE & MARTIN, LTD.

Established 1877.
71, TEMPLE ROW, BIRMINGHAM.
'Grams: "Locum, B'ham." 'Phone: Mid. 5963

1. MIDLANDS.—Country PRACTICE, well-established, receipts £1,024. Panel 857. Good accom.
2. STAFFS.—Good PRACTICE. Receipts £2,418. Panel 1,710. Good house.
3. STAFFS.—Well-established PRACTICE. Receipts £1,295. Panel 1,417. Good house rent.
4. STAFFS.—Nice-class PRACTICE. Receipts £1,434. Panel 811. Good house.

Many others on application.

BOVRIL MEDICAL AGENCY

ALDINE HOUSE, 10-13, BEDFORD ST., STRAND, LONDON, W.C.2.
Telephone: Temple Bar 1616-8.—F. M. THEW.

1. SUFFOLK.—Good country practice of about £2,800. Panel 1,660. Appts. £350. Ex. house. Large gdn. Prem. 1 yr.
2. SALOP.—Country practice of £1,300. Panel 450. Appts. abt. £70. Gd. house and gdn.
3. HANTS.—1/3 share of £3,700. Panel 2,700. Prem. 1½ yrs.
4. DEATH VACANCY, LONDON, S.E.14.—Receipts abt. £2,100, £1,500 from panel and appts. Mod. house rent £65.
5. DEATH VACANCY, W. ENGLAND Cathedral City. Mainly surgical connexion. Receipts £3,200.
6. NR. BRISTOL.—Receipts £1,312. Panel abt. 1,400. Appts. £130. Suit. hse. sell or rent. Ex. scope.
7. LANCS.—Very sound practice. £1,800. Panel 1,600. Good mod. house for sale.
8. DEVON.—Nr. Somerset border. Unopposed country practice, av. over £1,100. Panel abt. 450. Fine house. Garden.
9. HERTS.—Practice of abt. £900. Good scope. Suitable house and garden to rent.
10. S. WALES.—Sound panel and club practice av £1,250. Panel 1,458. Large scope. Mod. prem.
11. CORNWALL.—1/3 share of over £9,000. Panel 2,200. Scope F.R.C.S.
12. HERTS.—Developing dist. Practice about £1,500. Panel 700. Mod house. Good garden.
13. WILTS.—¼ share of approx. £9,000. Sound Practice in attract. dist. Panel 5,000. Suit. hse.
14. DEATH VACANCY, LONDON, N.W.—Mainly panel practice of £450-£500 offering ex. scope.
15. YORKS.—Sound practice of £1,127, offering ex scope. Panel 1,227. Gd. house to rent. Prem. £1,600, £1,000 down.
16. CORNWALL.—¼ share of £3,000 unopposed practice in attract. dist. Ex scope. Prem. 1½ yrs.
17. ESSEX—1/3 share after prelim. a'ship in very sound pract. of over £3,000. Panel 1,700.
18. CORNWALL.—Market town, ¼ share of £2,700, prelim a'ship. Panel 1,060. Prem. £1,600, instals.
19. LANCS.—Large town. Old-est. practice over £3,300. Suit house. Prem 1½ yrs. or nr. offer.
20. SALOP.—¼ share of £4,730. Panel abt. 2,000. Fees 5s to 2 gns. Gd. house and garden.
21. CORNWALL.—Old-est. practice. Receipts abt. £1,700. Good house, productive garden, rent £100. Prem. £2,200, or near, part instals.

LOCUM TENENS & ASSISTANTS (men & women) URGENTLY REQUIRED.—Details on application.

SALTAIR APPLIANCES

Each and every Saltair Appliance is made by highly skilled experts to the individual measurements of the eventual wearer, the measurements being taken either by the Doctor himself or by one of our fitters. The logical result of this individual production is greater efficiency in the Appliance and extra comfort for the patient. Incidentally our well-known guarantee (reproduced herein) covers the Doctor against all risk. The time-saving Measure/Order forms contained in our order book makes it a simple matter to obtain SALTAIR Appliances.

SALTS' SACRO-ILIAC BELT
SALTS' REGISTERED COLOSTOMY BELT
SALTS' APPENDICITIS BELT
ETC., ETC.

SURGICAL SERVICE
SALTAIR

Guarantee
"We guarantee to alter exchange or accept the return of any appliance without cost ordered by the Medical Profession, if not found Suitable within fourteen days from date of supply."
Salt and Son Ltd.

Their INDIVIDUALITY
results in SUPERIORITY

SALT & SON Ltd.
BIRMINGHAM 2

For Winter Ailments

CORAMINE

original Brand of Nikethamide B.P., respiratory and circulatory stimulant for oral, hypodermic and intravenous administration in respiratory crises (pneumonia, etc.) and failure of the circulation during infectious diseases (influenza, pneumonia, etc.).

Wide margin of safety (1-15 c.cm.)

Ampoules of 1.7 and 5.5 c.cm.
Liquid in bottles of 15 and 100 c.cm.

CALCIO·CORAMINE

double salt of Coramine and calcium sulphocyanate, potent respiratory and circulatory stimulant in cases of physical fatigue and threatening collapse. Bronchitis, catarrh, emphysema, bronchopneumonia and cardio-respiratory affections.

Tablets of 0.4 g. (6 gr.) in tubes of 20.

CIBALGIN

analgesic and sedative, combination of *Dial, diallylbarbituric acid* 0.22 g. (3½ gr.) and *amidopyrine* 0.03 g. (½ gr.), produces rapid relief and exerts a prolonged action, in neuralgia, cephalalgia, insomnia due to pain, articular and muscular pain.

Tablets of 0.25 g. (4 gr.) in bottles of 15 and 100.

NUPERCAINAL

analgesic and antipruritic ointment containing one per cent. Nupercaine, *a-butyloxycinchoninic acid diethylethylenediamide base*, producing prompt and prolonged relief from pain and irritation in chaps, chilblains, haemorrhoids and pruritus.

Tubes of 1 oz.

NUPERCAINE LOZENGES

each contain 1 mg. Nupercaine, *a-butyloxycinchoninic acid diethylethylenediamide hydrochloride*, and produce a prolonged anaesthesia of the mucous membranes of the mouth and throat, alleviate the discomfort of sore throat and aphthae and allay post-tonsillectomy distress.

Boxes of 15 and bottles of 100.

LITERATURE AND CLINICAL SAMPLES ON ANY OF THE ABOVE AVAILABLE ON REQUEST.

Telephone: Horsham 1234

Ciba LIMITED

Telegrams: Cibalabs, Horsham

THE LABORATORIES, HORSHAM, SUSSEX.

458

A Physiological Evacuant

It is easy to relieve constipation by the use of a purgative, but this does not remove the cause, so the trouble inevitably recurs.

Veracolate is a physiological evacuant, for it contains the bile salts—sodium taurocholate and sodium glycocholate—which are the natural laxatives of the intestinal canal. A mild vegetable laxative and a carminative are added to initiate peristaltic action and increase gastric tone.

Veracolate Tablets, therefore, relieve constipation and at the same time overcome the dyspepsia, biliousness, and sallow complexion associated with biliary stasis.

Veracolate encourages all the digestive activities to return to healthy normality.

VERACOLATE
TABLETS

WILLIAM R. WARNER & CO., LTD.
150-158, KENSINGTON HIGH STREET, LONDON, W.8

Temporary Wartime Address